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How Lockheed helps conserve defense dollars: The missile with 9 lives

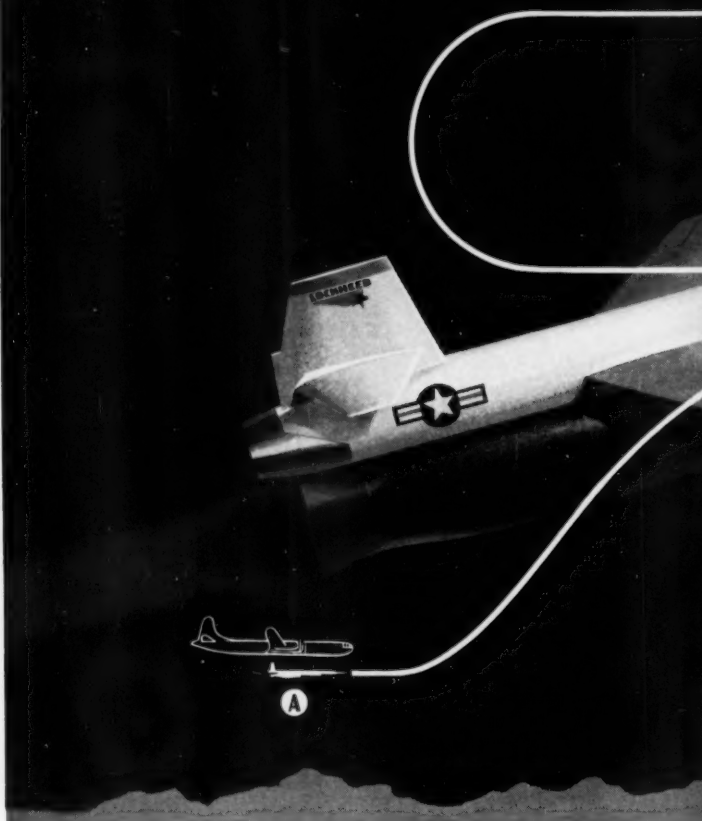
The U.S. Army's new Q-5 *Kingfisher* was designed by Lockheed's Missile Systems Division to provide our mighty arsenal of ground-to-air missiles with a realistic test of marksmanship—against high-altitude targets moving at supersonic speeds over 1500 miles-per-hour.

The *Kingfisher* is 38-feet long, 20-inches in diameter, has a 10-foot wing-span and weighs more than 7600 pounds. As it flashes across the skies it electronically simulates any desired size and type of "enemy" plane or air-breathing missile.

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Undamaged by "hits" scored on its electronic image, the Q-5 *Kingfisher* is parachute recovered after each flight.

This Lockheed-developed "missile with 9 lives" will enable the U.S. Army to achieve hitherto impossible proficiency in missile marksmanship against supersonic targets—at a saving to taxpayers of approximately half a million dollars on each recovery flight.

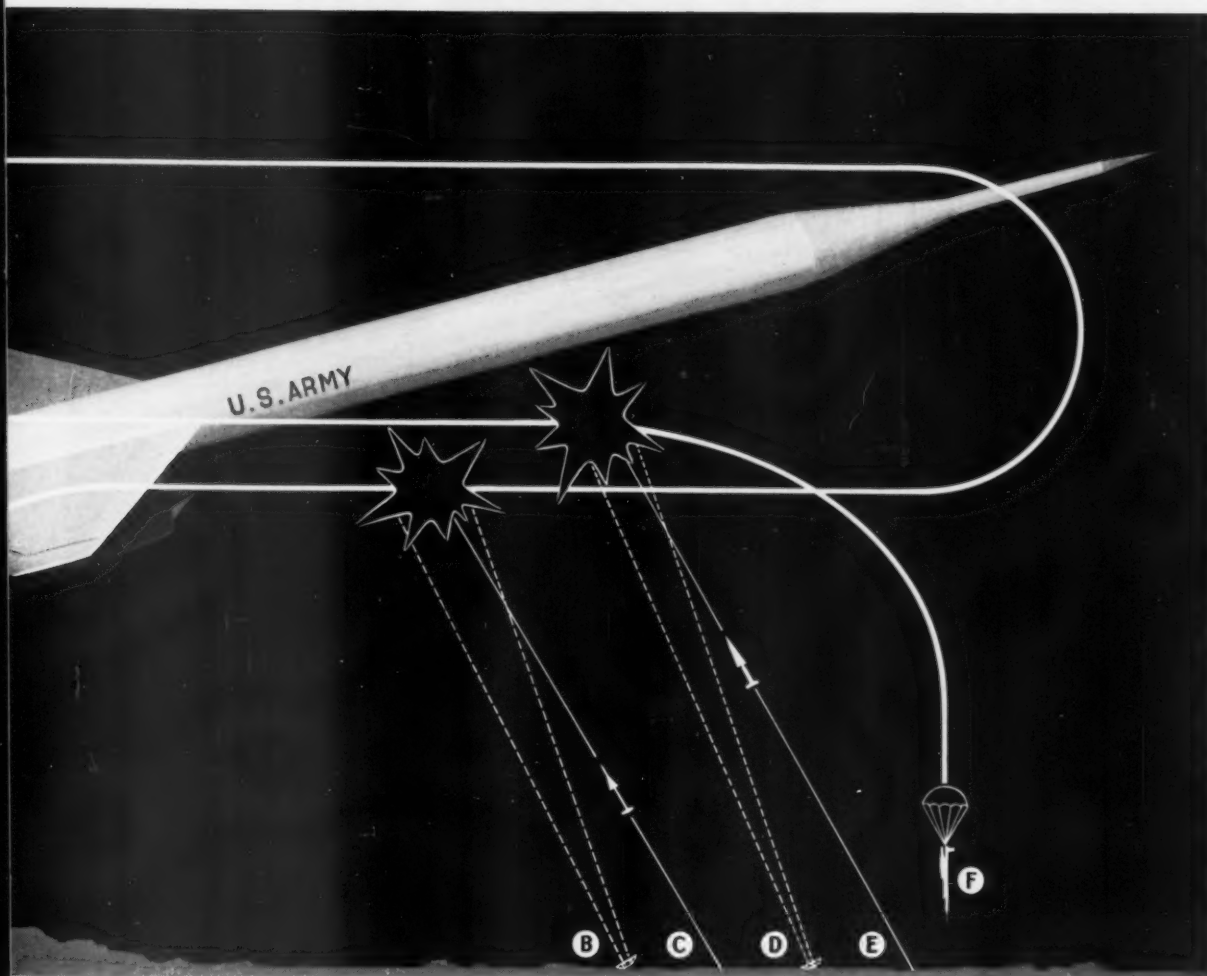


Q-5 is dropped by plane at 35,000 feet (**A**) in diagram). Then its twin rockets ignite, propel it to speeds required to operate its ramjet engine.

Q-5 is detected as "enemy" by ground radar (**B**), and its speed, altitude, and course are fed into fire-control computer of Nike battery.

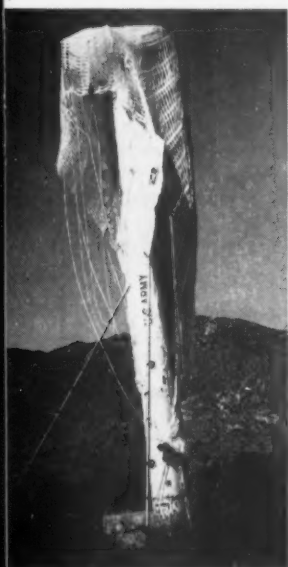
Missiles fired at Q-5 are like those used in wartime—but lack high-explosive warheads. Nike missile (**C**) scores "hit" on Q-5's electronic image.





Above: Entering oval flight pattern, Q-5 attains speeds over 1500 mph. Second ground radar (D) and missile-launching battery (E) practice their marksmanship until Q-5 *Kingfisher's* fuel supply is exhausted.

Left: Landing on its nose-spike in a remote, uninhabited area, after floating down by parachute (F), the Q-5 is recovered by U.S. Army ground crews—to be refueled and refitted for future flights.



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THE MONTH'S MAIL

Leaders from Recruits

● Colonel Swift's article, "Basic Training Isn't Simple" [November 1958] aptly sets forth so many basic truths that one is tempted to overlook the points with which one cannot agree. There is one basic contradiction in the article which cannot be ignored. Colonel Swift opposes the idea of accelerated training for recruits in the higher intelligence bracket, but a bit later he says "... the training centers must economize with the resources they are allocated, just as the rest of the Army must."

If we can put thousands of recruits through basic training in half the normal time, what more effective economy measure could be imagined? This is important today in terms of dollars-and-cents economics. It would be of even greater importance in a time of national emergency in terms of manpower economics. As has been frequently said, notably by General Clarke in his article, "The Training Task," in the same issue, we must practice in peacetime what we will have to do in time of emergency. Now is the time for our training centers to learn to segregate the recruits with higher intelligence and provide an accelerated basic training program for them.

Colonel Swift attacks this idea by using an example of cadets in basic training at West Point. "They are segregated according to academic ability in the classroom, but not in the training area." I'll grant there are vastly greater differences between the intelligence levels of the various groups of young men coming into our basic training centers than there are between the bottom and the top man, in terms of intelligence, in the entering class at West Point. The similarities between the two groups are superficial.

The highly intelligent young men who enter the Army as recruits are our most valuable potential resource, both during their service and after they are discharged. As Colonel Swift says, it is true that it is not necessary that they like what they have to do. However, I feel it is important, for the welfare of the Army, that they feel that what they have to do is necessary and useful. The obvious boredom of the normal basic training cycle is not merely a waste of their time and abilities which could be better used. It leaves them with an erroneous impression of the Army's use of its resources which all too frequently colors the rest of their military experience and is carried with them for the rest of their days. How often must we professionals remind ourselves that our civilian leadership will come from this group? That we must depend upon them for appropriations, good will, and public esteem?

At least two solutions are apparent. Initially, all men in the higher intelligence bracket (groups I and II) should go through an accelerated four-week basic training cycle. From there these men would immediately go on to specialist training or assignment to units. Another solution might be to mix these men with the other recruits at the end of their four weeks; for the last half of the basic training period they could act as assistant instructors and tutors.

Perhaps the best solution might be a combination of both methods. For those with higher IQ who are to become specialists, specialized training should begin immediately upon concluding the accelerated basic training. To those in this group who are to go into line units as potential leaders, the experience acquired from acting as assistant instructors and tutors

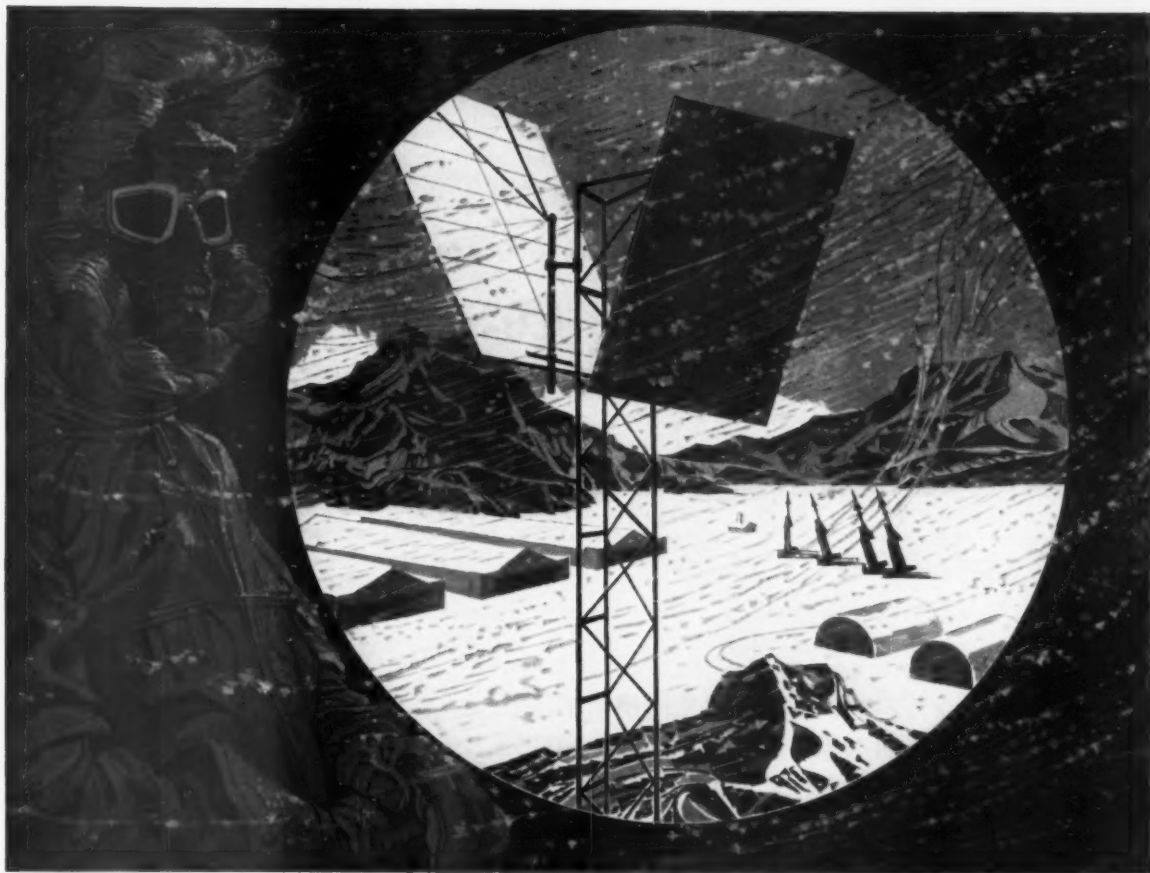
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might be the more valuable. This would accomplish, at least partially, Colonel Swift's idea: "... if he has exceptional leadership ability, as well as high intelligence, it certainly will not harm him to train on an equal level with the type of man he will eventually lead."

MAJ. IRVIN M. KENT

APO 58, NYC

Composite-Unit Training

• I respectfully question one sentence by Gen. Bruce C. Clarke in "The Training Task" [November]. He says, "It has been my experience that it is far better to organize fully manned units temporarily for training than to work with skeleton crews." I have been taught—and my experience has confirmed the belief—to recoil from composite training to which the quotation alludes.

To temporarily organize fully manned units from existing units means that men will not be serving under their assigned leaders. Besides, organized teams such as squads and platoons are broken up and thrown into a provisional or temporary organization. Also, the higher the level to which this temporary organization is carried, the more damaging the effect. For example, if we reorganize a rifle company by reducing one rifle platoon to fill the other three, immediately we reduce the

number of platoon leaders and units the company commander must control. An added disadvantage is that fewer platoon and squad leaders are being trained in their leadership assignments.

Extend this practice to a company test where one of the platoons has been eliminated. This reduces the requirement for the company commander to anticipate the use of his reserve, or a portion of it, and the need for him to actually employ this lost unit.

Another disadvantage of temporarily disbanding units for training is the damage to the morale of the squad leader, the platoon sergeant, the platoon leader, and other green-tab commanders who have a unit this morning, don't this afternoon, and have it again for Saturday inspection. No continuity.

In summary, I readily agree that in very special cases fully manned units is a must. Battle drill for a rifle squad or platoon, crew drill for crew-served weapons or for demonstrations. I'll admit that in some instances strength gets so low that we must inactivate certain units within an outfit. However, I'm against composite training as a normal practice just to have fully manned units.

I would add that I base my position upon experience as a regimental and battle-group commander for a year and a half, upon other sporadic periods of troop

duty, and upon present experience as Chief of the Army Element, JUSMAG to Thailand, which is principally a training mission. This in no way approaches General Clarke's outstanding record as a commander, which puts me on the spot for even raising this question.

I've sent a copy of this letter to General Clarke.

COL. ROY E. DORAN

APO 74, San Francisco

No Need for Jealousy

• Colonel Posse's critique [December] of my "The Real Pushbutton War" [October], for which I am grateful, raises some questions that should be clarified, especially for the benefit of those in the armed forces who, not being electronics experts, will come into contact with computers. Obviously, it is important that these people be not misled as to the nature of computers and their capabilities.

Colonel Posse is correct in saying that computers cannot think. Nowhere did I claim that they can. Unfortunately, in two places I lapsed into the easy popularization of referring to them as "electronic brains." However, I do not think that in the context of those particular paragraphs this label could have been really misleading.

On the other hand, when we make the bold (even though fully accurate) statement that computers cannot think, we run the risk of underrating their potentialities. We must not forget that a substantial portion of human thinking once was devoted to simple arithmetical processes which, some decades ago, were transferred to adding machines and desk calculators. More complex mathematical problems, until recently reserved to human reasoning because of the limited capabilities of mechanical calculators, have been turned over to computers which, as noted by Colonel Posse, can solve them almost instantaneously.

Since each of Colonel Posse's comments is substantially correct except where he implies my article said something different, perhaps it would help to review just what I did say.

My description of MADCAP (Mobilization Analyzer for Determination and Control of Allocations and Priorities) begins by viewing many operating sections, each attended by several persons including two telephone operators. Obviously, MADCAP is receiving information through human sources, as required by Colonel Posse in his first specific criticism. I don't think anyone could possibly misinterpret this paragraph to mean that MADCAP is gathering data through some weird superhuman faculty of its own.

Colonel Posse then comments on my next example: "The computer in this example can only follow management-

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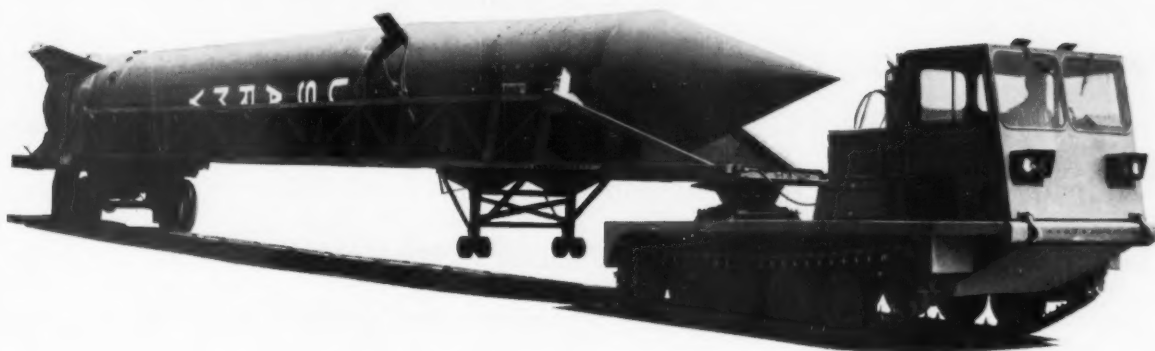
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7

A giant step has been taken in the U.S. military development program with contracts for the creation of an unprecedented primary strategic weapon system. It is the Air Force DYNA-SOAR, now in Phase-I design stage by a six-company project team under Martin direction.

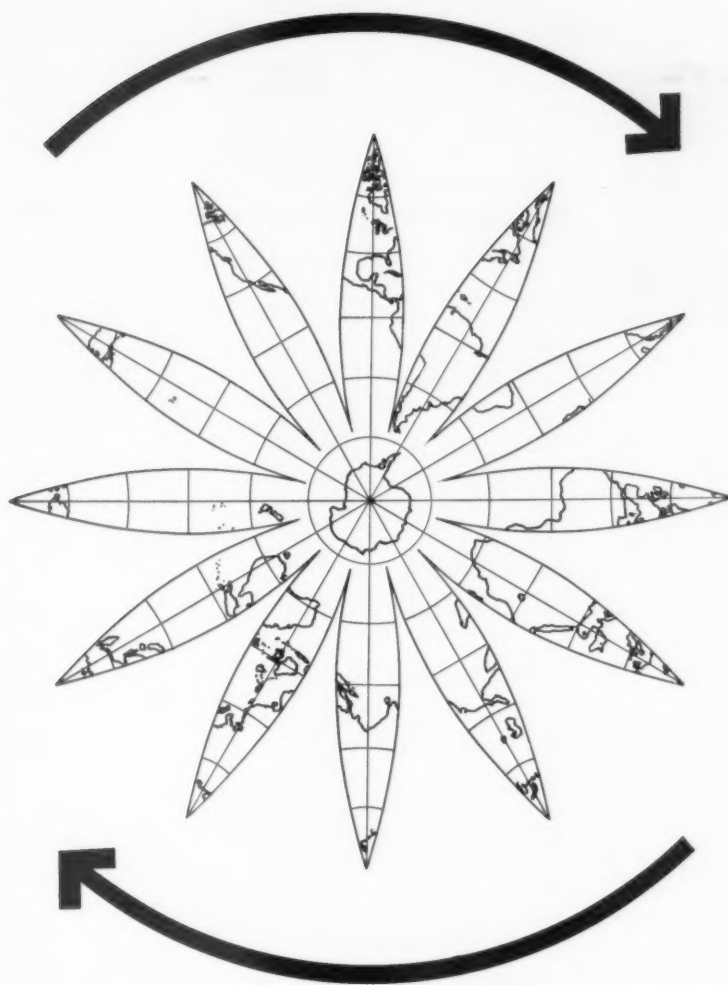
DYNA-SOAR—the most advanced military weapon system now in development—is a pilot-controlled bomber-reconnaissance space vehicle, its mission being to circle the earth at orbital velocity, with controlled aircraft landing capabilities. It will be propelled by several stages of rocket boosters, enabling it to operate from ground level to the ionosphere at hypersonic speeds.

In an entirely new and advanced concept of integrated industry coordination, the six companies teamed in this No. 1 military program constitute top capabilities in the basic areas of airframe, propulsion and radar guidance system development.

Bell, a pioneer in the boost-glide field, will design and build the airframe of the vehicle ...Bendix will develop communication, telemetry, hydraulic and electrical power conversion systems...Goodyear will produce the crew-escape capsule and the radar systems ...Minneapolis-Honeywell will be responsible for guidance and navigation to keep DYNA-SOAR on course and supply position and velocity information to the crew. American Machine & Foundry's responsibility is an advanced system of ground handling and launching equipment...And Martin will establish the configuration and design of the rocket boosters, carry out an experimental aerodynamic program for the complete vehicle, and assemble a full-scale mockup of the system.

Because of the challenging technical problems involved, the presidents of the six companies — aggregating assets of over \$2 billion — comprise an active advisory panel, with their top engineering teams participating.

Never before in military history has so formidable a task force of specialized industrial capabilities been applied against such an advanced concept.



FEBRUARY 1959

installed instructions, make comparisons, pre-programmed selections or mathematical computations based on stored information." No argument here. I think that from the point where my article says "MADCAP searches its prodigious memory" and then goes into mechanical details of the processes by which it searches, compares, computes and "decides," it is obvious that MADCAP is acting within the bounds of a computer's limitations as laid down by Colonel Posse.

Finally, Colonel Posse's comment on the indispensability of the human decision. Here I would point out that my description of MADCAP at work begins with a "revised war plan developed by the Joint Chiefs of Staff." Does this not make it clear that all of MADCAP's subsequent operations are for the purpose of implementing the decisions of the JCS, not of replacing them?

In the absence of any clear definition of "thinking"—today still a highly controversial subject in scientific circles—perhaps it would clarify matters to agree in principle on just what (theoretically) computers can or cannot do.

In my opinion, computers can solve any problem in which all the variables are known, provided the physical capacity can be installed for "memorizing" all these variables, as well as the programming mechanism required for reaching a satisfactory number of alternative solutions for comparison or decision. Not all possible solutions, of course, since then the physical requirements could be astronomical.

Where some of the variables are unknown, the problem-solving ability of computers must probably be in inverse ratio to the relative importance of the unknown factors, while the relative ability of the human mind, aided by instinct, education, experience, intuition and imagination, must prove demonstrably superior in the same ratio. Even at that, I may be underestimating the future potentialities of machines; but I still think it will be a long time before we will really have to be jealous of the darned critters.

MAX CARASSO

New York City

Be an Army Missionary

● My hat is off to Maj. Gen. H. P. Storke, who took time off to tell us "grass rooters" how to spread the Army gospel. His "Image of the Army" in the January issue was super advice. Let's all take heed and be military missionaries.

LT. COL. ANDERSON P. NEELEY
Columbia, SC

ARMY



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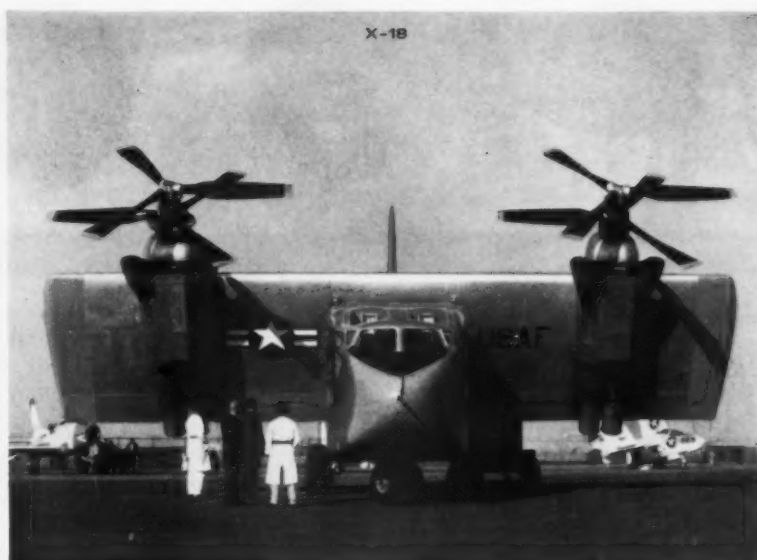
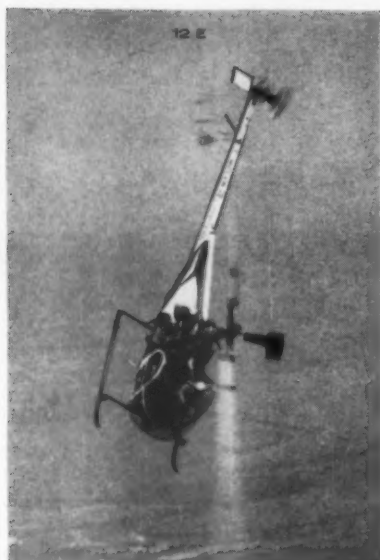
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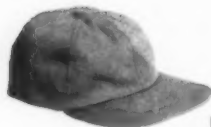
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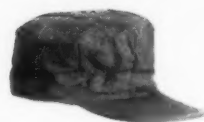
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HOW MUCH DEFENSE CAN WE AFFORD?

As the Congress conducts hearings and debates the issues involved in the Administration's Fiscal 1960 defense budget, more than a little is going to be heard about how more defense spending cannot be afforded. Whether there is an odd juxtaposition in values in the spectacle of a nation debating its military security in terms of dollars instead of necessary military forces can be left to others to ponder. The important thing is to realize that there are competent authorities who, while acknowledging that fiscal prudence is essential, insist that the nation's economy will not be harmed by increased

defense spending on essential programs.

Two influential groups who believe that a greater defense effort will not lead to fiscal insolvency are the Committee for Economic Development and the National Planning Association. A few months ago the Committee for Economic Development published a "Statement of National Policy" that expressed its position on this subject. At the end of 1958 the International Policy Committee of the National Planning Association issued a statement on the same subject.

In the paragraphs below we publish excerpts from both statements.

From the Statement of the COMMITTEE FOR ECONOMIC DEVELOPMENT:

The United States need not turn itself into a garrison state. But it may have to spend more of its output in order to save itself from disaster in this frighteningly changing world.

Since this is unfortunately, but overwhelmingly, the case, we are faced with a serious problem. How much are we willing to spend for national defense? To this should be added another question: How much can we afford to spend?

In determining the size of our defense effort, we will have to distinguish clearly and sharply between the limitations imposed by the amount of our total production that we are willing to devote to this purpose and the limitation imposed by the consideration that too heavy a defense burden will weaken our economy—and with it our ability to maintain our security for the long run.

In recent years there have been periods of contraction in defense spending of some magnitude, based primarily on the widely held belief that the so-called "American way of life" has been threatened by economic deterioration within as well as by aggression from without, and by the belief that "a sound economy" is the first mainstay of defense.

This sharply felt, but vaguely understood, fear may well have acted as a

hindrance to making rational decisions by our people and their national leaders. What it has most effectively done is to make apparent the need for a new look at both defense and non-defense programs to see whether we should spend more on the military aspects. As the CED Research and Policy Committee says:

"Preconceptions about the expenditures we can afford, the taxes we can stand, or the debt we can bear should not be allowed to interfere with informed and rational balancing of the gains and losses of enlarged national security programs."

This raises two important questions: (1) Should we accept a high rate of defense expenditures (and the taxes that go with it) even if this leaves the nation's economy fully intact? (2) Will this high spending (and taxing) undermine the soundness of the economy, even if as patriotic individuals we are willing to assume the tax burden?

If high defense expenditures threaten to sap the strength of the economy, we must take heed; a healthy economy is the major base not only of our defense effort but of the entire American way of life. By a healthy economy the Committee means one in which saving, investment and innovation are sufficient to keep up productive growth, with GNP rising by an annual average of from three to four per cent. It means, too, generally high employment, without inflation or deflation. And finally it means the maintenance of an acceptable balance between private and pub-



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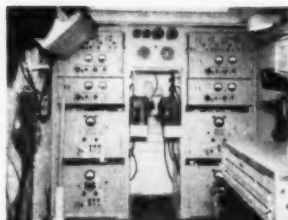
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lic economic decisions, without unwarranted governmental controls.

If we can finance defense without inflationary methods, we need not—in the absence of war—impose direct governmental controls over the economy to stabilize prices. Such controls are in conflict with our private enterprise system's major economic objectives of growth and stability.

We see no need to be apprehensive about whether or not the American economy can stand the strain of the present budget or even a considerably larger one. The risk that defense spending of from 10 to 15 per cent of the gross national product, or if necessary even more, will ruin the American way of life is slight indeed. It is even less likely that there is some magic number for defense expenditures that, if exceeded, would bring economic disaster; rather, the impairment of growth caused by increasing taxes is a gradually rising one. We have not reached a point at which anxiety over the healthy functioning of the economy demands that defense expenditures be slashed regardless of the dictates of military prudence. *We can afford what we have to afford.*

From the Statement of the NATIONAL PLANNING ASSOCIATION:

Before the Soviet Union's latest challenge to the freedom of West Berlin, it had been announced that the armed forces were to be cut again and that new appropriations for military defense were to be rigidly held within the limits set last year, although owing to rising costs this expenditure would provide even less in manpower and material. True, the latest Berlin crisis has produced some upward revisions of these figures. But, nothing yet suggests that there is any serious intention to make the major revisions required if the military strength of the United States is not to be dangerously deficient by the early 1960's.

There seems still to be little recognition of the fact that, desirable as a balanced or approximately balanced budget is in normal times, to seek it above all else in the circumstances of today may prove the prelude to disaster. For this is no peacetime budget with which the American people are presently concerned. It is a budget to insure the successful conduct of U. S. foreign policy under the conditions of the "cold

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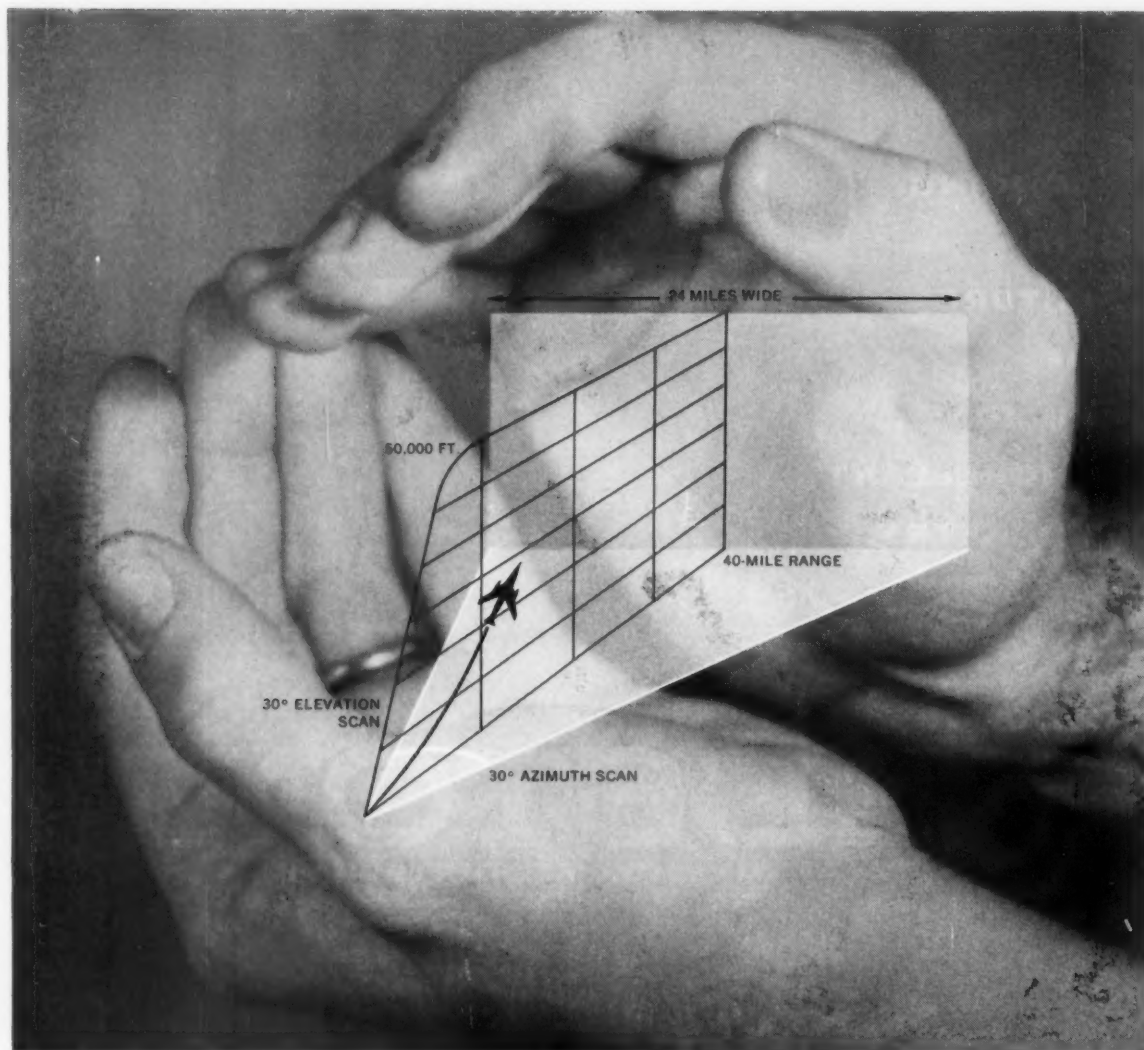
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high-angle, high-speed climb-outs of jet aircraft have been established by the U.S. Navy, the U.S. Air Force and by Lockheed, Douglas, Convair, North American and Hughes Aircraft Companies in actual operation at Moffett NAS, Castle AFB, and at Palmdale Flight Test Center.

Quadradar's unique versatility is providing air traffic controllers with accurate, safe altitude separation, monitored TACAN approaches, thunderstorm avoidance, and multiple runway coverage. It is also used as a toss-bomb trainer.

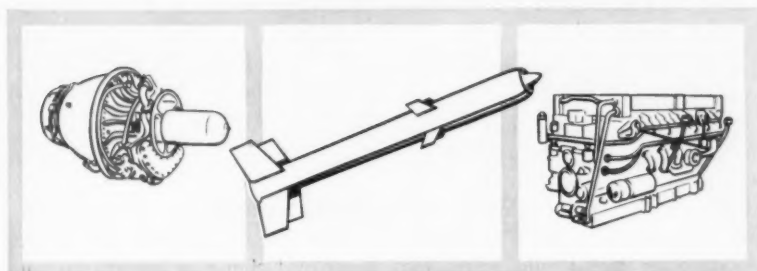
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war." And, although this would be far less burdensome than the budgetary exactions of a "shooting war," it is a profound mistake to think that expenditures can prudently be held in the strait jacket which peacetime fiscal measures soundly conceived would properly impose.

The argument is often heard that the United States cannot afford even the present inadequate level of defense expenditures and that, if it is long continued, the American economy will collapse, thereby enabling the Soviets to triumph without war. Hence, it is concluded, the best defense against the communist threat of world domination is a reduced and balanced U. S. budget. It is high time that the American people realized the dangerous fallacies inherent in this argument. As studies of the National Planning Association and other institutions have repeatedly shown, the United States could afford substantially higher budgetary expenditures if national economic policies were adopted which would enable the American economy to achieve more of its truly enormous growth potential. With an adequate rate of economic growth, the U. S. economy could afford a larger budget not only for increased military defense expenditures but also for the greater social capital investments necessary to sustain economic growth. With little less than national survival at stake, it would be a critical mistake to make a fetish of arbitrary budgetary limitations.

But the argument against adequate military expenditures contains another fallacy, even more dangerous. For, it must by now be obvious to every open-minded American that the successful conduct of U. S. foreign policy at a time when all the cherished values of Western civilization are challenged as never before depends upon the adequacy of American military preparedness. If, through lack of foresight, the United States permits a further unfavorable shift in the balance of world power, it would inevitably encourage the intransigence of the communist adversary; it would play into Soviet hands throughout the vast uncommitted areas of the world; and it would leave the closest friends and allies of the United States wondering whether this country had taken the full measure of the mortal danger to which the free nations are exposed—whether Americans are going to assume in time the burdens of sacrifice necessary to fend that peril off.

FRONT AND CENTER

Dimensions of readiness

Almost seven years ago the President was extremely critical of defense planning on a crash basis—plans that looked forward to a specified period of peril. In those days, when he was a candidate, the President wisely argued that defense should be geared to the long haul, that we should maintain a defense establishment at a high state of battle readiness year in and year out.

The President continues to adhere to this philosophy, but he now words it somewhat differently. "The threat we face is not sporadic or dated: It is continuous," he said in his January 1959 State of the Union message. Therefore, "we must avoid extremes." This mild advice seems almost surely to be a response to the criticism that the nation's defenses have been permitted to lag behind the Soviet Union's to a dangerous degree. The question it raises is whether it would be "extreme" to increase the level of readi-

ness of the nation to a point that would deter the enemy from all forms of aggression.

The President also said that our policy is "to seek to prevent war at any place and in any dimension." This most surely sounds the death knell of the policy of massive retaliation "at times and places of our own choosing," since the two seem inconsistent. However it may not be realistic to put too much weight on these words. Performance may not match them.

If this new policy was to be realistically pursued the budget blueprint for Fiscal 1960 would surely provide for an increase in strength of the active Army, a realistic step up in the programs of the Army National Guard and Army Reserve, and a modernization program that would rearm the three components of the Army and provide research and development funds for improved weapons for the Army in the years to come. That it doesn't, suggests that compromises are

to continue to plague the battle readiness of the nation.

The President also advised the people that "obsolescence compels the never-ending replacement of old weapons with new ones." Here again the budget blueprint will tell us whether action is to match words; whether the Army's dire need for immediate modernization is to be met or whether battle readiness will continue to be a sacrificial offering to fat living.

On page 24 we analyze the highlights of the FY budget as it affects the Army in terms of Army requirements in an unsafe world.

Reorganization

The reorganization of the Department of Defense in compliance with the reorganization law of 1959 was effected with little fanfare on 1 January, primarily because directives were carefully worded to preserve the status quo among the services. Points of friction among the services and inconsistencies or ambiguities continue to exist; so, too, do palpable impediments to full tactical development of Army Aviation and air defense.

The reorganization gave the JCS a staff and conferred more power on unified commanders.

One possibly new area of controversy lies in the requirement that budget submissions to the Secretary of Defense shall be on the basis of the expressed needs of unified commanders and that the requests of component commanders of unified commands "will be in agreement with the plans and programs of the respective unified commanders." This seems to mean, for instance, that the naval component commander of a unified command would have to agree, against his better judgment, if the unified commander saw no need for aircraft carriers in his command.

At Fort Sill, Okla., the daughters of the late Col. Dan T. Moore unveil a plaque in his honor. Col. Moore was the founder and first commandant of the U. S. Army Artillery and Missile School. The daughters are Mrs. Drew Pearson of Washington, D. C. and Mrs. Evan Kemp of Cleveland Heights, Ohio.



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Committee Assignments

New members of the Senate Committee on Armed Services include Sen. Strom Thurmond (S. C.), who is a brigadier general in the Army Reserve, E. L. Bartlett (Alaska), Clair Engle (Calif.), Howard W. Cannon (Nev.), and J. Glen Beall (Md.). All are Democrats except Sen. Beall.

New members of the House Committee on Armed Services include LeRoy H. Anderson (Mont.) a major general in the Army Reserve, Frank Kowalski, Jr. (Conn.) who retired last year from the Regular Army, Daniel B. Brewster (Md.), Fred Wampler (Ind.), Samuel S. Stratton, (N. Y.), Jeffrey Cohelan (Calif.), and Charles E. Chamberlain (Mich.). All but Rep. Chamberlain are Democrats.

Pentomic Evolution

As many expected, tests of the Pentomic division organization demonstrated the need for more conventional fire-

power, at least at this time. In announcing the addition of 18 155mm howitzers in each Pentomic infantry division, the Department of the Army also made some other changes.

The additional howitzers will give the division a total of 30 of these medium weapons. There is no change in the number of light 105mm howitzers or in the numbers of 8-inch howitzers and Honest Johns.

The number of rifle companies in the infantry battle group was increased to five from the present four by transferring one platoon from each rifle company. Each company will now have three platoons for a total of 15 in the battle group. While this adds another company headquarters to the battle group, it will ease the burden of over-worked company commanders and should improve control on the battlefield.

Another company headquarters was also added by grouping the support elements of the battle group into a

Combat Support Company. It will have such elements as the reconnaissance, engineer and assault gun platoons.

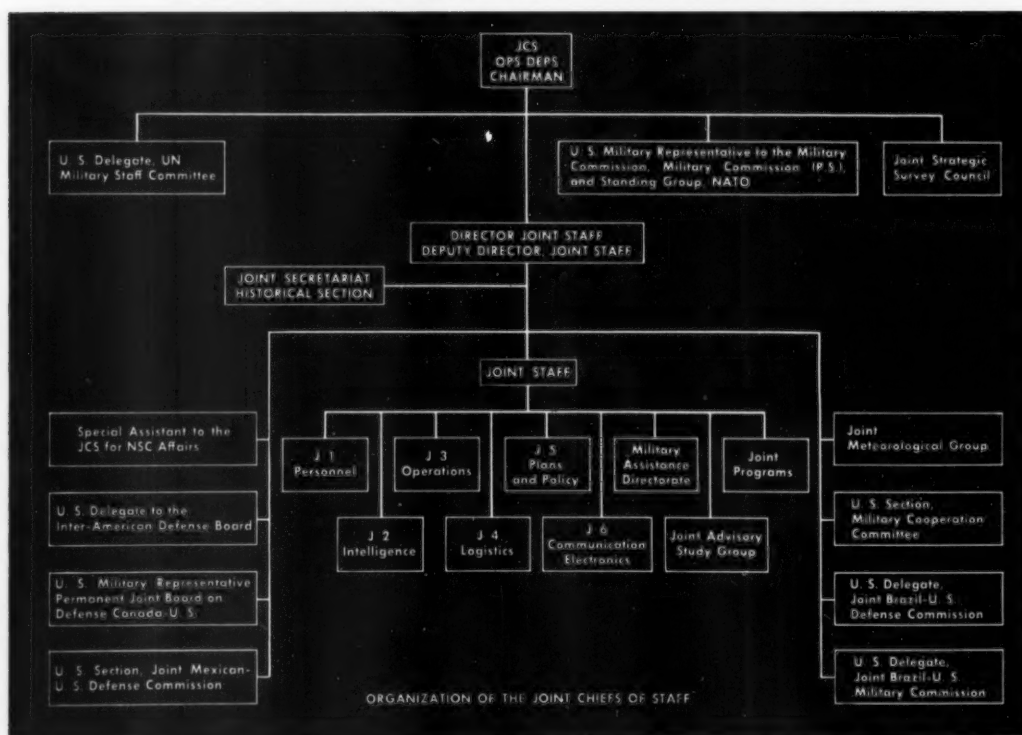
The division has added a radiological center and each battle group will have a ground radar section. An aircraft field maintenance capability and an aircraft control and landing navigational system have also been added. This indicates how importantly Army aviation is serving the Army's combat elements.

Minor changes have been made in the armored division to improve the effectiveness of the reconnaissance battalion and to provide for improved maintenance of divisional aircraft.

Armored Cavalry regiments are to have substantially larger numbers of aircraft to aid them in reconnaissance and battlefield surveillance. Battalions and companies of the Armored Cavalry outfits have been redesignated as squadrons and troops.

Three Army installations in the

THE NEW ORGANIZATION OF THE JOINT CHIEFS OF STAFF



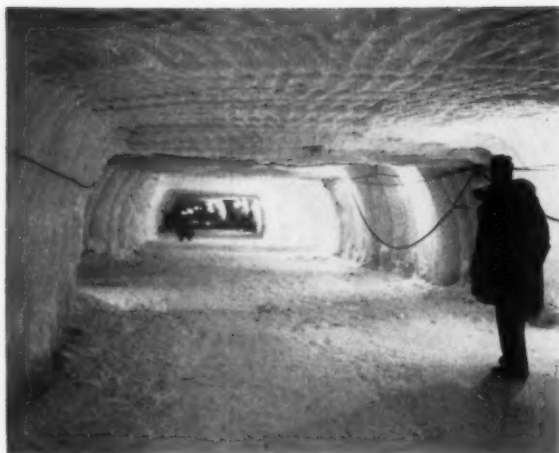


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Part of the tunnel carved out of the Arctic ice cap by Army engineers of the Snow, Ice and Permafrost Research Establishment. The section shown here is more than 1,500 feet long. These tunnels are used for storage of food, equipment and fuel.

United States will be inactivated by the summer of 1959. They are: Fort Polk, La., Fort Chaffee, Ark. and Fort Miles, Del. All are to be retained in an inactive status.

Active Army units now stationed at Fort Polk will either be transferred to active installations or be inactivated. The major unit at Fort Polk, Armored Combat Command A, will be moved to another installation, as yet to be determined. Fort Chaffee is currently

a U. S. Army Training Center. Its activities will be absorbed by other Army training centers. Fort Miles, primarily a firing range for conventional air-defense artillery units, will continue to be used for Reserve Components air-defense training.

Banyan Tree, the Army and Air Force exercise in Panama this month, will include operations by Strategic

Army Corps and Tactical Air Command Strike Force elements from the United States. An Airborne Battle Group will be flown from the United States to Panama and will execute a parachute assault landing. STRAC forces will include an Airborne Battle Group from the 82d Airborne Division, reinforced with an Honest John rocket unit.

Information concerning the drawings and specifications for The Flag of the United States containing 49 stars can be obtained from the Commanding General, Military Clothing and Textile Supply Agency, Philadelphia Quartermaster Depot, Philadelphia, Pennsylvania. This Army agency purchases national flags for the military services.

The branch United States Disciplinary Barracks at New Cumberland, Pa., will be closed on 2 March because of the decline in prisoner population throughout the Army. It is the third disciplinary barracks to be discontinued since 30 June 1957. The Branch Disciplinary Barracks at Fort Gordon, Ga., was discontinued 30 June 1957, and the Branch Disciplinary Barracks at Fort Crowder, Mo., was closed 31 January 1958.

General Officer Shifts

Brig. Gen. HORACE F. BICELOW to OCoFOrd . . . Brig. Gen. FRED P. CAMPBELL to USAREUR . . . Brig. Gen. ALBERT F. CASSEVANT to CG, Fort Monmouth . . . Brig. Gen. GEORGE W. COOLIDGE to Fort Knox . . . Brig. Gen. ERNEST F. EASTERBROOK to Army Aviation Center . . . Brig. Gen. STEPHEN R. HANMER to OCoFEngrs . . . Brig. Gen. HIRAM D. IVES to Third Army . . . Brig. Gen. CLINTON S. LYTER to Beaumont AH . . . Brig. Gen. MERVYN M. MAGEE to Eighth Army . . . Brig. Gen. ANDREW T. MCANSH to Second Army . . . Brig. Gen. CHARLES J. TIMMES to 101st Airborne Division.

Retirements. Brig. Gen. HAROLD G. HAYES . . . Brig. Gen. RICHARD J. WERNER.

University of Maine ROTC cadets are using the Army's Trainfire technique in marksmanship training. Trainfire stresses target identification and designation, and distribution of fire as part of a fire team, rather than concentration on hitting a bull's-eye.



PROVING OUT THE IROQUOIS



At the Air Force Flight Test Center, Edwards Air Force Base in California, skilled engineering and test pilots are proving out the Army's Iroquois helicopter in Phase 4 performance and stability testing.

This is just one hurdle in the Army-Air Force obstacle course the Iroquois must pass successfully to merit the Army's acceptance. And since the Iroquois, Bell's HU-1A turbine powered helicopter, was designed and built to meet the Army's needs for front-line duty, these tests are hard, tough and realistic.

Phase 4 testing, covering the helicopter's entire flight regime, is conducted to substantiate helicopter stability, handling characteristics and performance data. It will verify the HU-1A's ability to meet the particular weapon system requirement. Instrumentation is used extensively throughout the tests to record data, which is reduced to standard conditions, thus eliminating variables from the test results.

And this is true throughout the complete series of tests . . . the Iroquois is *proving* its worth . . . in every phase of performance, supply and transport, weather, maintenance, combat conditions and general military usage. Final approval of the Iroquois will mean that the Army, as always, has the finest in fighting equipment.

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FORT WORTH, TEXAS

• SUBSIDIARY OF BELL AIRCRAFT CORPORATION

FEBRUARY 1959

23

UNCALCULATED RISK

A YEAR ago, in a survey of the Administration's military budget for Fiscal 1959, this magazine characterized it as "inadequate in terms of the cold war commitments of the nation and the corresponding missions of the Army." That can stand; it is an apt description of the Fiscal 1960 budget. But there is more. The FY 1960 budget cannot be said to be a "calculated risk" in the military definition of that term. For the risk was less "calculated" than imposed by fiscal policy—it was dictated by dollars rather than by military requirements. The budget itself testifies to this. So does the Budget Message to Congress. And so, too, does the fact that the Joint Chiefs of Staff were given only 24 hours in which to "look at" the entire military budget in its final form.

In terms of the 1960 budget the Army will at best stand still and in some highly important areas it will fall behind. In active Army strength it will remain at the 870,000 figure that is to be reached by the end of this fiscal year. Reserve component strength will decline, however; the Army National Guard by 40,000 and the Army Reserve by 30,000. The planned procurement of hardware—weapons and equipment—will not keep pace with the rate of obsolescence. Here the Army will definitely fall behind. So too in research and development of arms and equipment for the future. None of this augurs well for the Army of the mid-1960s.

In the breakdown and discussion that follows, the Army's requirements are compared with what the budget proposes to provide. These requirements are military requirements, based on realistic consideration of the Army's mission and the means required to perform it.

Manpower

The Administration's FY 1960 budget calls for an active Army of 870,000 officers and men, which is the figure the Army has been directed to reduce to by 30 June of this year. This is 130,000 fewer than the million-man Army supported by AUSA on the basis of reasoned statements and evaluations by competent authorities, including the present Secretary of the Army

and Chief of Staff. It is 55,000 fewer than the 925,000 figure the Secretary and Chief of Staff supported last year as a compromise and, it is understood, fought for during the budget-preparation period a few months ago.

This decline in Army strength will result in one less division than the Army was willing to compromise on, also one less separate battle group, and six fewer surface-to-surface missile battalions. But what is more important than these figures indicate is the effect this will have on the combat readiness of the forward deployed Army and the Strategic Army Corps (STRAC). While the reduction in strength of the forward deployed Army will be relatively small, it means that some of the logistical and administrative burdens will fall on the combat units. This the Army had hoped to avoid. As every experienced soldier knows, such situations affect the combat vitality and integrity of battle groups, companies, platoons and squads and create serious omissions in tactical training.

This is also true of STRAC which the budget will reduce to three from the needed four divisions. STRAC has never been fully manned and armed but the new budget makes its condition even more precarious.

The Strategic Army reserve will be no more than a reserve force in name. The reduction in strength of combat support and training assignments will place even more of the training burden on what are supposed to be tactical units.

The Administration also wants to reduce the size of the non-active components, thus heralding another wrangle over the size of the Army National Guard and Army Reserve. Present strength of these two components, as decreed by Congress, is 700,000—400,000 in the National Guard and 300,000 in the Army Reserve. The Administration wants to reduce the Army National Guard by 40,000 and the Army Reserve by 30,000. In its budget planning the Department of the Army had supported the 700,000 figure as being realistic and necessary.

In the final analysis the proposed budget, if adopted, will provide for an Army less able to respond quickly

and decisively to war and near-war situations. It will be weaker in forward deployed forces, in STRAC forces, in STRAC reserves, in rapidly mobilizable forces of the National Guard and Army Reserve, and in the logistical and administrative forces that are necessary to sustain and support the Army.

Modernization

The Army will also have fewer of the weapons of modern war that it needs. These are the weapons required by the new facts of battle and by the organizational changes that were adopted because of these new battle facts.

In his Budget Message to the Congress, the President declared as Point No. 1 of his major recommendations: "Strengthen the effectiveness of our Armed Forces by further modernization and by improved efficiency of operations. . . ."

How diligently this objective was pursued is revealed in what happened to the Army's program of modernization.

Stated and reasoned Army requirements were slashed and cut to the point that the total of all Army requests for modernization were reduced by about 60 per cent.

Specific categories of weapons and equipment were reduced as follows: missiles about 78 per cent; Aircraft about 40 per cent; electronics and communications equipment about 45 per cent; conventional weapons more than 40 per cent.

Only a few months ago Secretary of Defense McElroy stated that he had "hopes" that in 1960 a beginning could be made in the modernization of the Army. And at about the same time General Twining, at the AUSA Annual Meeting, had suggested that the Army should emphasize modernization. With that kind of talk it did look like the Army might begin to get the Pentomic hardware it needed in Fiscal 1960.

The administration's budget dashes cold water on such hopes. The budget calls for a little less than \$1.4 billion for hardware as opposed to the Army's desire for \$3.4 billion. What this means is that the Army is going to be armed with weapons that are becoming more and more obsolescent.

It means that the weapons that are necessary to give meaning to the Pentomic organization will not be available. It means that the coming reorganization of the Army National Guard into Pentomic-type units will not be paralleled by the issuances of modern weapons.

The Administration's lack of foresight in providing new hardware for the Army makes a sham of the pretense that the U. S. Army is a "new" army. It is not unfair to ask how the Army is to be more mobile and more flexible, as the Chairman of the Joint Chiefs of Staff said it should be, if it is to be denied the means to achieve these desirable ends.

The Fiscal 1960 budget does not provide sufficient funds to offset the rate at which Army weapons and equipment are becoming obsolescent. The Army's inventory of hardware instead of becoming more valuable

is depreciating in value. At the present rate of non-modernization, in a few years it will be an army armed with obsolete weapons and fewer of them. What has become of the once bold idea that we would offset the enemy's superiority of manpower with superior weapons? Today he is superior in both manpower and weapons.

Research and Development

While the lack of modernization funds affect today's Army, the funds allocated today for research and development dictate the kind of Army the nation will have in the years to come. An adequate program of R&D is an insurance policy; an inadequate program could be disastrous.

Army research and development funds in FY 1959 amounted to approximately \$443 million. The comparable figure in the FY 60 budget is \$466 million. This increase roughly parallels the approximate five per cent annual increase in cost of items and services. However, it is understood that the Army will be able to invest more funds in research and development of conventional weapons, ground and air vehicles, and communications and electronics devices than in the past few years.

In missiles a large chunk of R&D money will go to the development of the Nike Zeus antimissile missile which is fully funded so far as research is concerned but is slipping because of the lack of funds for hardware. If production could proceed with development the nation's lag in air defenses could be narrowed.

Adequate research and development funds are in the budget for several other Army missiles but not for all. It is important to bear in mind that we are behind the Russians in midrange missiles of the 200- to 1,000-mile range. This is the approximate range of the Pershing SSM which is still in development and is fully funded in the new budget. Development of some battlefield close-support missiles, such as Davy Crockett, will be fully financed.

Altogether the Army research and development picture looks promising, but only in the light of the modest efforts of recent years. When the amounts allocated to Army research and development in both 1959 and 1960 are compared with Lt. Gen. James M. Gavin's assertion a year ago that \$700 million would be no more than adequate, the modest dimensions of the present program become apparent.

A BUDGET is a plan. A military budget is in a sense a military plan of future action. As such it should be made up with military considerations paramount. There is ample evidence that the 1960 military budget was not so assembled. Congress, which has the Constitutional power of the purse, will undoubtedly get at the facts behind this budget. When it does, it may conclude that the present and future combat strength of the U. S. Army has been reduced beyond the point of prudence.

In search of "concepts that will produce decisions on the battlefield"

Report on the INFANTRY'S CONFERENCE

IN December 1958 the United States Army Infantry School held its first world-wide Infantry Conference since 1946. Attended by more than 200 persons, including many high-ranking general officers who were once infantrymen, the Conferees divided into eleven committees and considered the present and future of the infantry arm. For guidance and orientation the future was considered in three time frames: the immediate and mid-range period from the present to FY 1963; a longer-range period, FY 1964-68; and a very long-range period, FY 1969 and beyond.

In publishing the report that follows, the editors

of ARMY are indebted to the editor of Infantry, the publication of the Infantry School, for making material that appears in its current issue available to our readers. Detailed conclusions and recommendations cannot be published because of security considerations; however broad conclusions that clearly show the trend of current infantry thinking can be and are reported here. We begin with part of the opening statement of Major General Paul L. Freeman, Jr., the Commandant of the Infantry School and conference host. Conclusions begin on the opposite page.

MAJOR GENERAL PAUL L. FREEMAN, Jr.



IT is our hope that [this Conference] will assist us to resolve the problems and formulate specific recommendations as to the course that Infantry should take in the period from now through 1965. To do so will require bold and imaginative thought, and a willingness to plunge into the future, abandoning where necessary outmoded concepts of the past.

First of all, for our investigations we require a point of departure. Where do we stand now? What might be required of us? What will we need to do the job?

It is not within the purview of the Infantry School to examine national defense policy and war plans. . . . However, we at the School who are charged with formulating Infantry doctrine must face the facts behind the guidelines

we are given. We cannot logically work in a vacuum, oblivious of the restrictions imposed by national strategy and available resources of men and money.

We now have an Army barely adequate in numbers to meet the many missions and requirements assigned it. What combat units we can maintain will serve little purpose in a war of the future of any size unless they are ready forces—fully equipped, trained and hardened. We have had small armies before, but probably not with so many frustrating problems, including those of funding, equipment modernization and developing new equipment, maintaining overseas deployment on such a large scale, training short term soldiers, and, most of all, with a zero time factor for reinforcement and mobilization. . . . Training must be simplified. Time no longer permits perfecting the individual soldier for his more complicated duties. . . . Also, we must recognize a more intelligent soldier who can learn in a shorter period of time.

Equipment must be more rugged and simple to operate and maintain. The M14 rifle, which replaces four other weapons, is a step in this direction, as is some of our newer communication equipment. Where equipment cannot be simplified, we must develop "hard to train" technicians from sources other than troop schools.

As for what might be required of us, the Chief of Staff has stated repeatedly that while we have a role in general war, another of our principal missions is to prepare for the more likely smaller wars. Situations that require an adequate, measured application of force—Infantry-type wars designed to destroy the enemy on the battlefield and not the friendly nation that we seek to preserve. We must develop and maintain compact, hard hitting forces capable of rapid movement from the U. S. or an overseas base to a peripheral area of potential or actual conflict to stamp out a spark before it becomes a bonfire. Forces light in equipment and manpower, but heavy in firepower, agile in movement and capable of sustained action pending reinforcement by heavier units and slower transport.

* * *

Quite obviously, we need a rapid means of transport to the battle area, and while the provision of suitable air or sea lift cannot be resolved by [the Infantry], at least we can advocate equipment that is air-transportable, and techniques built around such equipment. Another pressing requirement is battlefield mobility, principally mechanization of the Infantry. First, armored personnel carriers, at least for all assault forces; later, fighting vehicles.

In communication we believe that we must rely on radio systems to the nearly total exclusion of wire in the fast-moving situations that we envisage.

These are only a few of our more obvious problems. Problems that must be solved within almost inflexible parameters of manpower, dollars and lead times. Problems that must be solved by imagination and courageous decision. They can be solved only by acceptance of new concepts that have not been proven and that combat-experienced infantrymen might be reluctant to accept—concepts based on lighter, smaller units that must rely on heavier hitting power and greater agility, to provide their staying power, and attack formations and methods that more resemble a reconnaissance in force than a general advance. Tactically, we believe we must and can operate way out on a limb.

In solving our problems, we make slow progress if we consider atomic firepower only as an extension of conventional firepower. Merely to append it to the weapons and methods of the past will accomplish little.

The same precept holds for increased mobility. We cannot afford both the old and the new. For each new item of equipment adopted, we must give up some of the old; for each new role assigned a soldier, we must give up the one he now performs.

If we are to have more vehicles, better communication, heavier supporting weapons, the operators must come from present jobs, perhaps the rifle squads. Which do we need most?

In summary, we must ruthlessly review what we now have in weapons,

The trend of Infantry Thought

Vital role of infantry. The Conference re-emphasized the vital role of the infantry in both general and limited warfare. It stressed that land combat is the primary interest and responsibility of the Army and that the ultimate control of land still rests with the Infantry. And it reaffirmed that the mission of Infantry continues to be to close with and destroy or capture the enemy and to control the ground on which the enemy stood.

Man, the decisive factor. The conferees reiterated that man, with a weapon in his hands, will continue to be the decisive factor on the battlefield. He can be assisted and augmented by machines but he cannot be replaced by a machine. It was noted, however, that improved physical standards will be needed by the Infantry soldier in the performance of his traditional role of sustained close combat in future warfare. The conferees also reaffirmed that the infantryman must be able to fight in nuclear and non-nuclear wars.

* * *

Organization. Emphasis was placed on smaller, lighter units with greater firepower, improved mobility and increased potential for independent action. The preeminence of the squad leader as the smallest unit commander was stressed.

Command control of tactical nuclear weapons. The Conference went on record that nuclear weapons must be available to units at lower echelons. To combat known Soviet strength in armor, it recommended an improved family of antitank weapons.

Ground and air mobility. Major conclusions were reached concerning the Infantry's vital requirements for ground and air mobility. Recognizing the immediate need for means to concentrate and disperse forces rapidly, the Conference recommended that infantry personnel carriers be made organic to the battle group and that light, tracked, thinly armored weapons platforms and carriers be provided for Infantry crew-served weapons. For the future, it concluded that the Infantry must have vehicles with zero ground pressure—perhaps of the flying jeep type—which would largely free the infantryman

communication, vehicles, organization and tactical concept in order to strike out the outmoded. We must have a concept which seeks decisions on the battlefield, not blind destruction or mere survival. The concept must find the balance among the limitations imposed by money, by personnel ceilings, and by the state of our technological advances. This is the problem we all face. What priorities will you have? Where will you distribute the men and where will you find them? To which type of project will you assign the available money? What, in fact, are the battle-winning items and concepts as distinguished from those that are less essential?

Some of our problems would be quite simple of solution were it not for the restrictions that I have mentioned. Others related to doctrine and methods are more profound and will require a great deal of analysis. While those pertaining to items of equipment will require an evaluation of facts and figures, priorities and a preference for this now or something better later.

We are anxious to have your thoughts and ideas and to learn your reaction to our proposals.

This is an *infantry* conference. Quite naturally, we are primarily concerned with the Infantry, its problems and its future. However, we are not unmindful that all that we are discussing here involves the Army as a whole—an Army that in these days must stand fully unified and make itself heard.

The doctrine of combined arms is far more important for the future than it has ever been. We are grateful for the superb support that has always been given the Infantry in combat by the other arms and services. In these days it would ill become any one arm or service jealously to seek to improve its potential at the expense of the unified whole. Nevertheless, there are gray areas overlapping and duplicating the role and function of each arm in matters of weapons, devices and vehicles which can lead to rivalry, waste, and delay in the procurement of improved matériel unless the common interest is allowed to prevail. I wish to make it clear to the Conference at large and to the representatives of other arms and services in particular that we at the Infantry School have no intention of competing for or infringing on the requirements of other branches of the Army. More than any other branch, we of the Infantry have reason to realize that we cannot do the job alone. But to do our own part we have certain valid requirements on which we intend to be heard.



Brig. Gen. Stanley R. Larsen
Assistant Commandant



Col. James H. Hayes
Conference Director

from the limitations imposed by terrain.

Radio communications. To meet the problem of effective control in fast-moving and widely dispersed operations on the nuclear battlefield, the conferees recommended that greater emphasis be placed on the use of radios for communication, with less reliance on wire. They concluded that the Infantry must have radios with sufficient range to permit control of the entire battle group area of operation, and that the individual soldier must have a helmet-type radio to improve control and reduce the confusion to be expected in nuclear combat. The recommendations also included security devices which could permit habitual voice transmission.

Surveillance devices. In view of the wide frontages anticipated in the future, it was concluded that gaps between units must be covered by surveillance devices. It was recommended that our scientists look for more effective surveillance means, possibly employing principles other than radar.

Supply functions. The Conference recommended that supply functions be concentrated under centralized control in a support group, that maintenance be functionalized and that greater reliance be placed on preplanned supply packets which could be delivered by all available means, including missile-type projectiles.

Technician training. Numerous recommendations were made concerning the training of the Infantry soldier. The conferees called for the establishment of procedures which would permit the training of skilled technicians concurrently with the development of new matériel so that both would be ready for employment simultaneously. They asked also that doctrine and training literature likewise be prepared concurrently with the development of weapons and equipment.

Ranger training. It was recommended that Ranger-type training be extended throughout the Army training system to utilize the proven value of this training in the development of better soldiers. A modification of safety requirements was called for to eliminate unnecessary restrictions which prevent realistic training.

Expert Infantryman Badge. The conferees also asked that more attention be given to the Expert Infantryman Badge, and recommended that the infantryman be permitted to earn "legs" on the award over a period of a year.



THE TIES THAT BIND

CAPTAIN BOYD T. BASHORE

To restore the urge to command, the bonds that restrict leadership must be loosened

SINCE the beginning of World War II the prestige and desirability of commanding company-sized units have been slowly but steadily on the downgrade. There are many reasons for this unhappy situation as the following summary suggests.

We must admit that the 400 per cent expansion of the Army between 1939 and 1945 watered down the quality and prestige of its junior leaders. The officers who were senior to this mass of new and inexperienced junior leaders had served in company grades for many years. These seniors, in the main, were undertrained for *their* higher commands, and overtrained in the same jobs in which the new crop of leaders were inexperienced. Thus it became customary, and frequently necessary, for an officer at battalion or even an army headquarters, not only to tell a junior *what* was to be done, but in addition, exactly *how* to do it.

What has been unjustly labelled "Doolittleism" brings to mind certain postwar trends which many professionals

today blame for every imagined ill. Some of these complaints are valid, others are not.

But in the final analysis, this period of adverse public opinion, coupled with the findings of the Doolittle Board, that "undeniably poor leadership by a small percentage of those in positions of responsibility" caused a further lack of confidence in junior leaders. Although responsibility, as such, remained with squad, platoon, and company commanders, the complete authority to control these units began to be drawn higher up in the chain of command. Commanders became more and more reluctant to allow imperfectly trained juniors the leeway of learning from their mistakes. Not realizing they were feeling the pain of a self-inflicted wound, and further aggravating it, some commanders complained, "I have to do everything myself."

In this way the so-called Doolittleism helped perpetuate and compound the centralization of control that had begun in 1939 with the expansion of the Army. Our generation of field and company officers was bred in this atmosphere of self-perpetuating centralization.

No authority left to the NCO

The average company commander himself, however, is as much to blame as anyone for this trend. He has usurped and centralized at company level much of

Captain Boyd T. Bashore, Infantry, was an enlisted man during World War II and graduated from West Point in 1950. He has served in straight infantry, airborne infantry, armored infantry, and tank companies in CONUS and in Germany. He is now on duty at Fifth Army Headquarters. This is his sixth contribution.

the authority that by tradition and right should be delegated to his junior leaders. After World War II, even the most minor disciplinary prerogatives of the noncommissioned officer, from approval of passes to extra duty, became either forbidden or suspect. Many key noncommissioned officers felt they were sapped of the authority and initiative (but not the responsibility) of training and disciplining their units.

Certainly there was no wrong in prohibiting the abuses of punitive authority by certain noncommissioned officers who illegally inflicted forms of mass or individual jackleg punishments like "training hikes," "GI parties," and others. The tragic affair at Parris Island is a painful reminder of the evils that can be bred by over-exercising or misinterpreting a noncommissioned officer's disciplinary authority.

These very real but unofficially sanctioned disciplinary powers we have taken from the noncommissioned officer have not been replaced with any kind of legal disciplinary authority except reprimand. This has created a virtual vacuum of authority. I believe this is one of the reasons for the low state of noncommissioned officer prestige in company-sized units, and not some of the highly touted but basically eyewash fetishes like special chevrons or green tabs. No matter how you slice executive prestige in any business, it is intimately related to power and authority. When responsibility and authority are in the hands of an executive, his prestige is high. When authority is partly or totally centralized, when an executive cannot or dare not exercise independent judgment, then the prestige naturally devolves on the next higher executive who can.

Disparity in rank

During this same period of centralization in company-sized units, the prestige of the unit commander himself also began to wane. This decline contrasts with an almost equal rise in the prestige of higher staffs. In every unit, from field army down to infantry battle group and armor or artillery battalion, the TOE rank of a subordinate commander is one (in some cases two) above that of the general or special staff officers at the next higher headquarters. Only where the executive or chief of staff is concerned does staff rank even begin to equal that of the next subordinate commander.

But not between company and the next higher headquarters. Here the condition suddenly reverses. We find senior staff officers at least equal in rank to the poor, prestige-less company commander. One of these, S3, for example, is usually a major—one grade higher than the company commander. This officially sanctioned second-rating of the company commander recently has been seriously compounded: a colonel and his high-powered battle group staff have been crammed down with no buffer over the unit commander's head. Many persons feel that our combat units should be commanded by majors. Certainly this is a most realistic recognition of the responsibility and importance of these officers.



Inflated rank among higher staffs has made it simple for a lieutenant to obtain the promotion requirements of service in a captain's slot. So simple that many persons feel it's foolish to jeopardize the OEI they have carefully nurtured in relatively limited and safe staff assignments. Why stick out one's professional neck any more than necessary? Why risk the varied and rigorous requirements of company command?

During this period of increasing staff deification and command centralization, company commanders have also become increasingly aware of the ever-growing administrative and tactical complexities of the various combat units. It is difficult to visualize the impact that this trend, dovetailed with many of the facets of centralization, has had on the popularity of unit command.

The modern unit commander is more than ever the counterpart of the president of a complex business in which the stockholders (the taxpayers) have a heavy investment. The financial responsibility involved in commanding such a unit is staggering compared to what it was ten or fifteen years ago.

Thus, where the growing complexities of administration, equipment, and tactics in recent years have been demanding that all phases of commanding a company-sized unit be more and more decentralized, the opposite has occurred. The company commander, recognized as the lowest administrator in the Army, has become ensnared by his own creeping centralization of his sub-

ordinates' authority. At the same time, some of his authority and prestige has been sapped from above. In many instances, he has become submerged in a conglomeration of trivialities which have been designated as his personal responsibility—administrative details that for some reasons he is not permitted to delegate, and the likes of which are demanded of no other commander.

How can we correct these conditions?

I believe we can do it by giving the company back to its commander and his subordinates. That is, by delegating authority and responsibility—a basic principle in executive management; a principle necessary for the efficient operation of any relatively complex business, whether civilian or military.

Return the company to the captain

First we must examine policies and directives emanating from the Pentagon. Any current regulation or circular which, without appropriate reasons, encourages or requires centralization above or even at company level, should be amended to allow further decentralization. The mere fact that in our Army some of these privileges, responsibilities, prerogatives or administrative chores have never before been decentralized below company level should, in itself, be cause enough for reevaluation in the light of our atomic Army's needs.

The recently published DA Circular 20-6 says: "Continued emphasis at Army Staff and all field command levels is essential to insure that the prestige attached to company command is enhanced and that freedom of action and initiative of company commanders is not unduly restricted." This splendid circular goes on to attack such sensitive fields as the latitude for command decisions at unit level, unnecessary requirements for personal certifications and signatures, and unessential administrative workloads. It provides for an annual IG report on these matters. How effective this directive will be in practice we cannot tell, but certainly it could be a major step forward. While a unit commander cannot be relieved of over-all responsibility, certainly we hope he will not be censured for failure in a sphere where he has delegated responsibility, with propriety and good judgment, to a subordinate.

Some other experiments should be considered.

Article 15 of UCMJ, compared to old Article 104, accomplished at least a partial decentralization of punitive powers. The maximum punishment a unit commander could impose was increased from seven to 14 days. For the first time, the basic power of field-grade officers to impose a punitive reduction in grade was included as part of non-judicial punishment. (But many persons felt this was small amends for the much greater administrative power to make or bust that had earlier been taken from the unit commander.)

Definitely, Article 15 was a step in the right direction. It proves that such decentralization is practicable and feasible. Now it's time for a longer step: complete delegation to the lowest "commands" in the company. Pla-

toon, section, and squad leaders officially should be given some tangible portion of Article 15's punitive authority that now rests only at and above company levels. The new grade structure and the policies enhancing noncommissioned officer prestige provide a splendid vehicle for such experimentation.

In essence, such a plan must insure that all key noncommissioned officers (not specialists) in senior ratings who are serving in command positions be given punitive authority under Article 15. Such a decentralized system would increase the authority and prestige of every leader from squad to battle group, and would more adequately distribute their legal disciplinary powers. A great advantage in the plan is that for the first time it gives the noncommissioned officer legal punitive powers. Naturally, he would need certain safeguards and a period of adjustment. Mistakes will occur, but they would be a small price considering the over-all good.





Let the company commander promote

Another example of deleterious centralization is the hoarding of the major portion of the administrative make-or-bust powers at one or two levels higher than the company. At one time the company commander, within the limits of his TOE, through administrative means could promote and demote whom he pleased. Now, only battalion or battle group exercises most of this function. In addition, quotas must come down from astronomical heights. Possibly the quota system can't be improved. But no matter how much or how little say he has in promoting or busting, the unit commander is allowed not even the face-saving administrative chore of signing the orders.

The new Enlisted Evaluation System may be a step in the right direction. It provides a standard proficiency test that can be graded, and job performance can be evaluated by the unit commander. We can only hope, however, that higher commanders will not give more weight to a machine's rating than they do that of a soldier's commander. Again, the unit CO gets a new administrative load. We must compel him to delegate the jobs of testing and rating to his subordinates.

The supply albatross

Supply responsibility—that administrative albatross that hangs about the neck of the company or battery commander—should also be delegated. During recent years, more has been done to ease the unit commander's logistics burden than in any other administrative field. Both the Pentomic division and the atomic field army

structures have removed some of the burden of responsibility for unit supply. Unfortunately, in accomplishing this, we have had to retain informal responsibility for supply even higher in the chain of command—at battle group or battalion, rather than delegating it to squad and section leaders. We must be sure to avoid false decentralization. Unless it becomes necessary, we must not multiply by four or five times one of the most unpleasant old responsibilities of the company commander and pass it up a level higher, to the battalion or battle group commander or his S4.

Regulations, forms and procedures, however, still do not clearly fix informal responsibility for TOE equipment fully and proportionately on platoon, section and squad leaders. Responsibilities of leaders of these units are still hazy. They must be clearly spelled out.

Too seldom we hear of any leader below the unit commander being held accountable for serious supply deficiencies. I have seen a great many expensive change-of-command droppages or surveys initiated by contemporaries (about ten cases of shortages of from \$500 to \$1,000, and two which topped \$2,000) that were attributable not merely to the surface cause of inefficiency on the part of a unit commander; the roots went much deeper. Squad and platoon leaders had failed to carry their share of the load. Above them, a succession of higher commanders had in general lacked an appreciation of present-day unit supply problems. This attitude is exemplified by the you-have-three-days-to-inventory-that-company attitude. Dangerous enough in rifle companies, such an attitude could lead to bankruptcy in engineer, artillery, or armor outfits.

When a commander is assigned to a new unit in which he must carry any degree of informal responsibility for property, give him an opportunity to inventory thoroughly. Move his unit to a quiet area or put it on a temporarily reduced training schedule. Civilian businesses at least slow operations during inventory; some shut down. Why should a company-sized military business have to operate at maximum output during such a time? The senior commander who sets any limitations—other than the complete satisfaction of the new unit commander as to the whereabouts of every piece of equipment and the accuracy of all his records—is asking for trouble.

Without materially changing present policies, there is much more we can do to permit the company's junior leaders to take their share of the load from the company commander.

Over-supervision of training and administration

We must decentralize training to the greatest possible

extent. Over-supervision by higher headquarters must be avoided. The unit commander and his leaders must be allowed a reasonable latitude to train in the subjects they consider necessary. Tactical results must be inspected, as distinguished from a detailed checking of progress. Only in this way will such decentralization extend into actual combat.

In administration, let's try making the platoon, rather than the company, the lowest level. Why can't the signature of the platoon leader, whether he is an officer or noncommissioned officer, be as authoritative as that of the company commander, say, in answering letters from creditors, home folk, or members of Congress? A platoon leader's reply by indorsement, sent through proper channels, or his efficiency rating of a noncommissioned officer, should be just as valid as the company commander's. The unit commander should be encouraged to delegate every possible administrative action to his subordinates.

The practice of switching unit commanders by the fall-out-one system each time a change occurs higher up has a terrible effect on the morale of companies and their commanders. Regulations should fix assignment as company commander at a minimum of a year, but preferably for 24 months or more. I'll wager that during recent years the average period in company command throughout the Army has been less than six months. A policy of a one-year limit for higher commanders, while it certainly helps a great many field-grade officers to gain experience, nevertheless removes them just as they are beginning to reach peak efficiency. It takes from four to six months—especially in a new command—before an officer reaches peak efficiency.

No bankers' hours in the company

In the absence of a special reason for a relief (which, of course, should occur at the earliest possible time), every effort must be made to change company commanders immediately after, rather than before or during, a company AFF test, or an IG's visit. In combat, of course, conditions are much more fluid and the needs more acute, but the same principle applies: if possible, change commanders during quiet periods.

Another reason for the unpopularity of unit command is that while the lowliest clerk at battalion or battle group headquarters observes bankers' hours, the same time schedule is rarely practiced in the company and its lower units. There are various ways of correcting this, but action will have to be taken by headquarters considerably higher than the company. Any action must be predicated on the simple fact that regardless of the "established" working hours, the conscientious squad, platoon, or company leader puts in anywhere from one to two hours more each day than his counterpart at higher levels.

Base ratings on experience

As for efficiency reports, we must take special care to rate unit commanders on the basis of their experience

compared with that of their peers. There are bound to be differences in the performance of the young lieutenant during his first rating period while in his first tour as company commander and the old pro next door in his sixth or seventh. An experienced artilleryman will need considerable shaking down if he is placed in command of a rifle or tank company for the first time. We must bear these considerations in mind when we rate company commanders.

Although the Pentagon denies that records support the contention, most officers sincerely feel that a high efficiency index is easier to acquire in the narrow confines of a staff assignment than in the infinitely broader command field. If this belief is to be dispelled, raters must insure that fair, relative estimates are made. Where the performances of two officers are so closely uniform that uncertainty exists as to which should be rated higher, the company, or any other commander, should be favored.

During combat, an officer commanding in an assignment which rates higher rank, now can be paid the salary of that grade. This, of course, will gladden the hearts of lieutenants who in the future must lead companies under such conditions. The policy should also be applied to command positions during training. Especially in STRAC units, spot or brevet promotions should go along with such increases, as in the SAC and British systems.

"Proficiency" or "responsibility" pay increases are authorized for officers and noncommissioned officers serving in key jobs. In any such system, the poor company commander should be at the top of the pay scale; key company noncommissioned officers should be at the top in their fields. Troop commanders should get priority over all specialists. When you compare Army executive pay to that for comparable responsibility in industry, you find it is the commanders at all levels who truly have been underpaid.

Trust in junior officers

What I advocate is in effect a reappraisal of the present roles of noncommissioned officers and the junior commissioned officers of the company-sized unit. Squad and platoon leaders should be squad and platoon commanders, the first in the chain up to army. By showing more official trust in a unit's junior officers, by delegating to them not only responsibility but also greater disciplinary, administrative and tactical authority to command their units, their prestige will rise. This, in turn, will relieve the company commander of much of the unnecessary pressure that has been building up in his job.

I would fight to get a company-sized command in any unit, TOE or experimental, in which most of these thoughts and recommendations were implemented. I believe most of my contemporaries would too. It wouldn't be long before a company-sized command was again considered by everyone to be the best and most sought-for job in this man's Army.



Patrolling through a Malayan rubber plantation . . .

Lieut. Col. Richard C. H. Miers

British Army

IF your job is to eliminate Communist terrorists in Malaya you won't get far these days without a good flow of Police Special Branch Intelligence; that is, information obtained from civilian informers or better still from that very rare bird, a traitor in the terrorist organization itself. With only some 1,500 terrorists now left in Malaya and those, after ten years' experience, as cunning and elusive as wild cats, it is no longer much use just going into the jungle and hunting for them. Even if you are lucky enough to find them they will seldom stand and fight unless driven into a corner, and as we all know there are precious few corners in the jungle.

To gain any measure of success, then, you must have good Special Branch information which in turn postulates good Special Branch officers, and in this respect my battalion has been well favored during the past few years. Both of the men with whom we have worked have been first class though as different in individual approach as chalk is from cheese. The first, Evan, was a particularly colorful character, a delightful companion too, with a great fund of good humor and cultural interests rare for these parts. Evan was a man of the widest interests who searched the crannies and crevices of life for its better understanding and enjoyment. To call on him in his bachelor home was always diverting. One evening he might be found resplendent in white dinner jacket taking his ease in that long chair beneath the Henri Matisse reproduction, glass of brandy in hand, listening peacefully to his fine selection of classical records. On another he would be huddled con-

AMB



Lieutenant Colonel Richard C. H. Miers, DSO, OBE, British Army, until recently commanded the 1st Battalion of The South Wales Borderers in the fighting against the Communist terrorists in Malaya. During World War II he fought in the Abyssinian Campaign before commanding a battalion of the King's African Rifles in Burma. Since then he has been attached as liaison officer to the Greek Army during the second Communist rebellion, held an appointment in the War Office, and served on the faculty of the British Joint Services Staff College as well as on the NATO Defense College in Paris. Colonel Miers has

PUSH

and through a jungle stream . . .



been lecturing in the United States and Canada since returning from Malaya, and will soon take command of the 24th Independent Brigade (part of the British Strategic Reserve), when he is to be promoted to brigadier. Colonel Miers tells us that at one time there were some eight thousand terrorists in the Malaya jungle. Today, by methods such as the one described in his article, the numbers have been whittled down to little more than a thousand. The jungle war continues in isolated parts of Malaya (now an independent member of the British Commonwealth), but today it is little more than a nuisance.

spiratorially round a small table talking in low tones to a couple of shifty-eyed informers. Or yet again one might find him rigged out in full jungle kit, face blackened with grease paint, waiting to go out on some reconnaissance or ambush; for Evan was no back room boy. Far from it. He hated being left out of the sharp end of any operation, and as if to justify his inclusion he would often wear, perched on the back of his head, a somewhat faded and shrunken green beret to proclaim his wartime association with the Commandos. Before coming to Malaya he had for a time been Winston Churchill's bodyguard and his reminiscences of this period would, had he not once made a solemn promise never to publish them, have filled a book. Earlier he had served his apprenticeship with the Metropolitan Police as a Special Branch officer and undergone all the chores of attending, incognito, political meetings of Communists, Fascists and other eccentrics in order to note down what the speakers said. With his splendid sense of humor Evan had been less irked than most by these dreary tasks and had some delightful stories about them. In particular we loved to hear of the occasion when he and his Boss, slipping quietly into the back row of some East End meeting, were dismayed to hear the chairman call for silence and announce:

"Gentlemen. It has come to our notice that plain clothes policemen purporting to be members of the Party have been worming their way into our gatherings. They have no right to attend these private meetings and I ask you now to be alert and on your guard, ready to expose these miserable spies, these wolves in sheep's clothing."

An angry rumble greeted this call to arms. People turned to inspect their neighbors. At last one or two pairs of suspicious eyes began to rest on Evan and his companion. Evan rose to his feet:

"Mr. Chairman," he said, pointing an accusing finger at his Boss, "I do not like the look of this man. He has

in search of Chinese Communist terrorists.



been acting in a very peculiar manner ever since he came in."

A posse of stewards rushed forward. No; said Evan's Boss, he was not a member of the Party. No; he had not got an invitation to the meeting. Yes; with a last long threatening look towards Evan, he supposed he would have to leave if he was not wanted. His hurried departure, made to the accompaniment of boos and cat-calls, was followed by the chairman hammering on the table for silence and making another announcement. The loyal comrade, he said, who had so fearlessly unmasked the impostor in their midst should be rewarded. He was, went on the chairman, unanimously elected to the platform. Loud and prolonged applause as Evan walked down the aisle and modestly took his seat among the privileged. Evan was wont to pass over lightly his subsequent interview with the Boss. The latter, still smarting from the memory of his undignified retreat from the hall, was not, apparently, altogether impressed with Evan's argument that as their exposure as policemen was imminent it was better that one should go to the wall than that both should be forced to withdraw. It was after this adventure that Evan was posted to duty with Winston Churchill, no doubt with the idea that for once he would meet his match.

WE were having lunch one day when Evan came bustling in. He was dressed, as was customary, in civilian shirt and blue shorts, but we noted with satisfaction, a gap was already appearing between the two. This was an excellent sign. The more hot the news was, the more imminent approaching action, the more his shirt would ride up, until, if things were really exciting, a great expanse of jolly white belly would be exposed, shaking and wobbling in tune with its master's animated narrative.

"Can we go somewhere more private?" asked Evan, casting a suspicious glance at the Chinese waiters.

We got up and hurried along to the office. Under his arm Evan clutched the familiar battered old brief case bulging distinctively with his automatic pistol; there was always something faintly dramatic about Evan. Inside the office he opened the brief case, fished out the enormous map he always carried, weighted it down with his pistol against the breeze from the overhead fan, and got down to business.

"I have," he said, "a very delicate Source who has been working for me for some time." "Source" is Special Branch jargon for "informer," being, we always suppose, an attempt to give a flavor of respectability to what must, after all, be a pretty dubious profession. Sources become delicate not through any physical disability, but because their activities have become such as to put them in jeopardy of discovery by the other side. This particular Source, whom we will call Joe, looked like a winner. He was in fact a full blooded member of an armed terrorist gang, but he had seen the light;

or to be more accurate, he had succumbed to a combination of the vast rewards offered by Government for the elimination of his comrades and the disillusionment of living year after year in the squalor of the jungle with community reading from Marx or Lenin as the principal *divertissement* during the long evenings. Although he had been working for some time for Evan, they had never met. That would have been far too risky for Joe, as discovery would have led with absolute certainty to his very unpleasant death at the hands of those he was betraying. Instead he had maintained communication with Evan through devious channels and by the passing from hand to hand of letters written on fine rice paper and rolled into tight little spills, the better for secretion about the person. It was one of these spills, which, together with its translation, Evan now placed on the table in front of him. In Joe's complicated double life matters had come to a head. Another insult from his master, which might be the first germs of suspicion developing, had convinced Joe that the time had come to strike. Loss of face to a Chinese is, of course, a shocking degradation, almost but not quite as painful as losing money. To be publicly rebuked for lack of attention, as had happened to Joe at last Wednesday's community reading, was about the end. So to the possibility of a glittering financial reward was now added the sweet incentive of revenge.

Joe's plan as given in his letter was quite straightforward. Next Saturday he was due to lead his master and two other terrorists to a meeting with a neighboring gang, the selection of the rendezvous having by great good fortune been left to Joe himself. On the way they would have to pass a fairly large clump of bushes in a rubber estate, and it was here that Joe suggested we should lay our ambush. He would be the leading member of the party of four, but as additional identification he would wear, as he usually did, a white scarf around his neck. Would we ensure, he asked plaintively, that all the soldiers were fully briefed not to shoot at him? That was the outline of his plan, then followed the details. The party of terrorists would move in broad daylight probably about 9:30 a.m. relying, as they always did, on the rubber tappers and other laborers to give warning of the presence of any government troops.

It certainly seemed a foolproof enough plan, but we would have much preferred Joe to have restrained his impatience. The delivery of the slip had taken several days. It was now Friday. Action was therefore required tomorrow, which gave us much less notice than we would have really liked. Besides, we were not too keen on an informer choosing an ambush position for us. Apart from the fact that it might turn out to be a poor choice from a tactical point of view, informers have been known to play a double game: a party of soldiers huddled in a clump of bushes could look pretty stupid if the enemy knew they were there and attacked first.

"Well. What about it?" asked Evan, examining

Joe's letter inscribed so meticulously with row after row of beautifully formed Chinese characters. For a man writing the death warrant of his erstwhile friends Joe seemed to show peculiarly little emotion.

We thought for a moment. The alternative to following Joe's plan was to wait for a better opportunity with possibly more terrorists in the net and more time to perfect our plans. On the other hand Joe's sands seemed to be running out; he might be unmasked by his comrades at any moment. A bird in the hand . . .

"It's 'on' so far as we are concerned," I said.

"Agreed, then," said Evan. "Mind if I come myself?"

We were delighted and knew the soldiers would be too. If Evan took the trouble to come out himself it was usually a sign that something interesting would happen.

WE had a lot to do in a short time. First to select the men to form the ambush party. With a thousand to choose from, every one of whom would have given a week's pay and his back teeth to join such a promising enterprise, Solomon in all his glory would have been hard put to it to arrive at a just decision. Nor do my Welsh soldiers with their very, very plausible claims for individual preferment on these occasions exactly help the matter of selection. However, we settled for Captain Cyril Morgan in command, the Intelligence Officer, a Bren gunner, a man armed with a short gun for close quarters work, and a couple of riflemen. To these had to be added Evan and his henchman, making a total of eight men. For the next few hours these men aided by a dozen helpers worked flat out in making their preparations. In the battalion we have very strict rules for ambush parties. Nothing must be left to chance. Faces, arms and hands, in fact every inch of exposed white skin must be smeared with black grease paint lest the ambush party be spotted by a passing taper or terrorist. Hair cream must be thoroughly washed off, for the natives have a very keen sense of smell. Anything which can possibly rattle, rifle sling swivels, metal buckles on equipment, must be bound down with adhesive tape. Then a minute inspection is carried out by two or three officers who will, for example, remove a forgotten watch from someone's wrist (the dial can act like a heliograph if it catches the sun's rays), and check that no one is suffering from a cough. After that, according to our drill, the party must carry out several rehearsals on a piece of ground similar to the actual one, and finally go down to the rifle range for a last practice shoot and check of weapons. Overelaborate preparations for such a miserable enemy? Not on your life. After living for so long like hunted animals the terrorists have acquired an instinct for danger and a speed of reaction to it which are little short of the uncanny. At the slightest hint of trouble they will be off—slipping and twisting through the undergrowth like some unearthly djinns. And they seem, too, to live with their

fingers on the triggers of their weapons; they are uncommonly quick on the draw.

So in the time available the party spared no pains in their preparations. I went down shortly after midnight to see them off. Evan, green beret pulled well down on his head, carbine slung over his shoulder, loomed large and bulky among the soldiers. I said my short piece to the men which was much the same as I say to all ambush parties: Don't fire until you are certain you have your man in the sights of your rifle; to "brown off" towards a fleeing terrorist is useless. It is, like most advice, much easier to give than to follow, but it is undoubtedly the answer to obtaining success in jungle operations. Cyril Morgan then fell the party in and they moved off.

Problem One is to arrive at the ambush position undetected. It is always Problem One. Go by truck and everyone in the neighborhood will know you are in the vicinity. Walk, even by night, and the chances are that someone will spot your footprints next morning

With four-days' rations packs get heavy



and get word to the terrorists. Fortunately in this case Joe's clump of bushes was fairly near the railway line, so Cyril decided to travel by Wickham trolley—the name given to those large enclosed armored wagons which in Malaya precede passenger trains as a form of protection against terrorist sabotage. With ample room for the whole party the trolley rattled off down the line. By previous arrangement the driver slowed down at a secluded spot; the party leapt off, slid down the embankment and waited in the shadows until the train following had passed by. The time was now 3 a.m. At the first streaks of dawn they set off in single file, taking great care to avoid leaving tracks. The last man, walking backwards, brushed over any footprints inadvertently left by the others.

SO far so good. Joe's now famous clump of bushes was found without difficulty. It wasn't too bad as an ambush position, though it was a pity the track which the terrorists would use was so overgrown with vegetation. Those were the first thoughts which passed through the mind of Private Bevan, one of the riflemen of the party, as he took up his allotted position in the bushes. As a very young National Serviceman he was, as a point of fact, lucky to have been chosen, but he was a consistent good shot and had proved himself to be steady on patrol. His personal problem was now the one which, to a greater or lesser degree, has perplexed anyone who has ever tried to lay an ambush. If he moved forward until he could get a good view of the track there was more than a chance he would be spotted by a passerby; if he moved farther back he couldn't see a damn thing. Private Bevan chose what he thought was a sensible compromise and having done so, gently raised his rifle. He could just see the track all right, but now grass and fern lay over the foresight. What was that the Old Man had said? Don't fire until you have got them in your sights. Easier said than done. Well, he'd have to stand up and shoot even though that made a split second delay. His little plan made, Private Bevan settled down. It was no good pretending he was comfortable. The ground, sloping slightly upwards, made the sitting position misery. But if he lay down he could see nothing at all. Minutes dragged themselves by. At least another three hours to wait. Sweat trickled into his eyes and ran down his back. Muscles began to twitch and ache. Now all the discomfort seemed to be centered in his left leg. Hell! the wretched thing was going to sleep, that's what it was. Very gently Private Bevan tried to shift it to a new position. It caught in a branch, shaking it slightly.

"Sss . . . sh," whispered the Intelligence Officer a couple of yards away. Private Bevan worked his toes up and down in his boot. That was better. He'd take good care not to let a leg go to sleep again. His thoughts turned to his mates back in barracks. They'd be on their way to breakfast now. Lucky devils, walking about free and easy, talking and laughing. And there

was he sitting like a trussed fowl not even daring to clear his throat. Wouldn't the folks back home in Newport have a good laugh if they could see him. And what would they be doing now? Eight hours difference in time between Malaya and England they said, but was it forward or back? Private Bevan never had time to work this one out for suddenly there was such a resounding crash just above his head as to make his whole body rigid with tension. He gripped his rifle until it began to shake in his hands. A fresh stream of sweat ran down his face. Gingerly he peered out on to the track. Not five yards away an elderly Chinese tapper was stacking a pile of tins of the kind used for collecting the liquid rubber from the trees. The pile had toppled over with a noise which in that silence and so close at hand sounded like the knell of doom.

FARTHER along Cyril Morgan watched the tapper anxiously. It was just possible that the ambush party had been spotted and that the play with the tins was a general warning that troops were in the area. It was the sort of thing the tappers did, either out of real sympathy with the terrorists or because if they failed to give warning they feared the later consequences; terrorists can be very unpleasant to tappers whom they suspect of being on the wrong side. However this time Cyril's fears seemed unjustified. More people were arriving for the day's work by bicycle and on foot and everything seemed normal.

Evan was quite unperturbed. Old soldier that he was, he had selected his position on arrival and now lay flat on his back, eyes half closed. Joe had said that he would cough on approach and that was warning enough for Evan.

It is an axiom for which it is difficult to find an exception that ambushes never work out as planned. Either the terrorists come from a totally unexpected direction, or only one comes instead of the promised half-dozen, or they don't come at all. In this case they beat all guesses by coming early. It was 9 a.m. when

A Royal Navy copter flies resupply missions



from down the track came the sound of voices. They had a different note altogether from those of the tappers, more purposeful somehow, more authoritative, as they called out to workers in the fields. As they came nearer it was apparent, too, that they were travelling at a good pace; indeed the measured tread of their feet could now be heard. Eight pairs of eyes looked out from the bushes. Suddenly four figures, neatly dressed in khaki drill, peaked caps with a bright Red star as a badge, appeared, as it were, on stage. Each was carrying a rifle in the ready position. One of them was having an acute coughing fit.

The next few seconds were, to say the least, confused. But with the advantage of retrospect* I have pieced together what I believe is the story. In the first place "white" is a classical euphemism for the dirty little strip of cloth, indistinguishable from his yellow Chinese skin, which Joe had tied round his neck. In the second place Joe made the cardinal mistake of failing to maintain his position in the lead.

As planned, Cyril fired the opening shot, wounding, but failing to stop, his man (thereby providing yet another example of the phenomenal amount of lead a terrorist can carry and still get away). Quick as a cat Evan was on his feet as Cyril swung his Tommy gun on to Joe's master—by far the most important terrorist present. But to Evan, Joe's master was blanketed by a rubber tree. What Evan *thought* he saw in that split second was Cyril pointing his gun in the direction of Joe himself who, at that moment, blissfully relying on his scarf for identification, was happily watching the elimination of his erstwhile comrades.

"Not that one, for God's sake!" yelled Evan.

"Okay," shouted Cyril, shifting his aim from Joe's master and letting fly at Joe, the only other terrorist he could see. Down went Joe with two bullets in his leg.

"Not that one, I said," screamed Evan.

"Make up your something mind," said Cyril, nettled.

Meanwhile the Intelligence Officer and Private Bevan were being kept busy. The fourth terrorist was dodging back to the undergrowth. Private Bevan was on his feet. "Get them in the flippin' sights," he repeated to himself. But before he could fire he felt a sharp hot pain in his thigh. This time his leg really had seemed to have gone to sleep. A broad patch of blood seeped through his trousers. Private Bevan subsided into the bushes.

Joe's master, for it was he who had opened fire on Private Bevan, decided his luck had held long enough for one day, and zigzagging through the trees, disappeared in the direction of the jungle hotly pursued by Cyril and the remainder of his men, though they had little real hope of catching a fleeing terrorist in that thick country. Ten minutes later they returned and took stock. The results were disappointing. The only visible addition to the bag was the one terrorist accounted for by the Intelligence Officer. Private Bevan and Joe lay wounded on the ground, though fortunate-



Back at the base camp all is calm and orderly

ly neither was badly hurt. Somewhere in the area there was another wounded terrorist, and Joe's master unfortunately was still at large.

It was at this stage that I arrived by helicopter in a small clearing near the scene of action. After seeing the wounded men loaded into the helicopter for the return journey I got Evan and Cyril to tell me what had happened. Relations between the two, as they recounted their separate stories, were, not surprisingly, a trifle cool. Later of course they would dine out on their misunderstanding for months to come, but at the moment the weariness which assails everyone who has been in an action, and the disappointment of missing the principal terrorist subdued even Evan's robust sense of humor. In fact, none of us need have worried. Within an hour our "follow-up" party, complete with a tracker dog, picked up the wounded terrorist and not long afterwards Joe's master, hunted and harried, gave himself up. But all that belongs to another story.

THAT afternoon, after the hue and cry had subsided, I went to visit Private Bevan in Hospital. In one bed, looking very comfortable, was Private Bevan. In the other, bright as a peacock and welcoming me with a friendly grin, was Joe. Both were astonishingly cheerful and obviously getting on famously together. A nurse dressed in spotless white came bustling in. The boys, she said with mock severity, had had quite enough excitement for one day. Time for sleep. For a moment I watched her tucking in the bedclothes and smoothing the pillows. The whole thing was delightfully incongruous. British soldier in one bed. Chinese ex-Communist in the other. A moral seemed to be lurking somewhere round the corner, but it escaped me. However, in the inimitable manner of the British soldier Private Bevan summed it all up with precise accuracy.

"It is," he said as he obediently closed his eyes in preparation for sleep, "a flippin' rum sort of war."



ON THE PROWL WITH 11th CAV'S RANGERS

ARMORED REGIMENT IN GERMANY

ENGAGES IN REALISTIC TRAINING

Making like Phil Carey, the star of a dated Hollywood epic, two Rangers cover their buddies who are moving through the trees in the background

Before a squad goes on patrol it is given a map briefing of its route and plan by the Regiment's Ranger training officer





Faces blackened and all noise-making equipment taped down or removed, a Ranger patrol takes to a roadside ditch to escape detection

Being a somewhat stupid aggressor, the man on the stump isn't supposed to know that a Ranger is about to pounce on him



Rangers are taught to use partisans for directions and information about the enemy





Bearing Army markings, three Cessna T-37s fly a Project Long Arm mission

The Case for Aerial Observation

LIEUTENANT COLONEL JOHN W. OSWALT

THE Army's need for increased capability in target acquisition and combat surveillance has long been recognized. In 1950, for instance, the Office of the Chief of Army Field Forces (now CONARC) called for a longer-range, higher-performance aircraft with vertical takeoff, capable of living in the field with corps and army long-range artillery and guided missiles.

Dependence upon the Army's sister services for longer-range visual and camera aerial reconnaissance is unsatisfactory since delays in obtaining and evaluating information prevent the immediate engagement of targets of opportunity. As we move into periods of increasing atomic plenty, reaction time, from spotting of target to engagement, must be reduced to less than an hour, or the target will disappear.

The area photographic coverage and route reconnaissance the Army now gets is satisfactory but it does not allow the instant reaction we need against fleeting targets or for special search. Thus the Army must have its own means of obtaining target information and to conduct battlefield surveillance.

The need for longer-range target acquisition and combat surveillance means is made explicit in *Figure 1* so far as our present artillery target acquisition means

and ranges are concerned. Note that the means immediately available to the artillery can acquire targets roughly out to 15,000 yards. By using a BC scope at a ground observation post, we can pick up targets from a distance averaging 5,000 yards. On a clear day an air OP can spot them approximately 10,000 yards forward of the front lines. Targets beyond this distance can be picked up if our aircraft can get past friendly lines and through the enemy's air-defense and ground fire. If the enemy has more advanced radar-controlled air-defense weapons close to our lines, it is not likely that craft of the L-19 type will get very far, though drones with sensory equipment might.

The range of 15,000 yards for sound-and-flash as-

McDonnell XV-1 convertiplane, one of first designed for Army use, had stub wings to help provide greater forward speeds by rotor. Shortage of funds required the Army to drop this project



Lieutenant Colonel John W. Oswalt, Artillery, is Deputy Director of Combat Developments, U. S. Army Aviation Center, Fort Rucker, Alabama.

or Organic servation



Bell XV-3 convertiplane uses tilt rotors. It is only one of three convertiplane designs considered by Army still alive. Promising Sikorsky XV-2 design was stillborn by lack of development funds and McDonnell XV-1 was dropped later

Mohawk AO-1 observation aircraft will replace the T-37s when numbers sufficient for tests become available next year



sumes favorable winds and good visibility. Because of the danger from hostile air-defense weapons, the ability of Army aviation to photograph is limited generally to oblique shots. To depend upon the other services for photos from longer ranges involves too much time. We can't depend upon them at all where fleeting targets are concerned. Therefore, we must plan to use drones, operating over the enemy's area, to extend our ability for longer-range photography. Today's artillery has not the organic means of acquiring targets at the distances that can be traversed by Honest John, the 280mm gun, Corporal, Sergeant, Redstone, and eventually the Pershing.

Figure 2 shows roughly the ranges of intelligence interest for units from battle group up to army. Intelligence people are interested in carrying combat surveillance as far into the enemy's territory as the location of objectives that may be assigned to the unit; to the range of the unit's weapons; and to determine

enemy activity that is likely to affect our immediate battle situation.

A commander's decision can be no better than the quality, timeliness, and reliability of the information given him, and its interpretation.

Why should the battle group commander be interested in what's going on as far as 15,000 yards to the front of his position? The answer is that an enemy unit spotted from this range may within a few hours be in his front yard. If the enemy employs helicopter-borne forces, the time may shrink to minutes.

Project Long Arm

What is the Army doing to develop its means for longer-range target acquisition and combat surveillance? In the fall of 1956, a unit called Project Long Arm was activated at Fort Rucker, Alabama. The following June this unit was issued three Cessna T-37 twin-jet trainers borrowed from the Air Force. We realized that this model certainly was not the best vehicle for the purposes we had in mind. The Air Force would allow no major modifications to accommodate equipment such as cameras, television sets, radar, and infrared gear. Besides, there was little space for such target-acquisition equipment. For normal operation this machine requires a hard runway of from 3,000 to 4,000 feet. This places it roughly in the same performance class as the World War II Spitfire, P-40, or P-51. Such a craft could not be used in the field by corps or divisions. As for performance, however, it was in the same general class as the machine we wanted. Lacking a convertiplane or other higher-performance vertical riser, the Army needed this plane to further evolve and develop our ideas on what was needed, and how the machine would be used when it became available. We also wanted more experience in operating and maintaining higher-

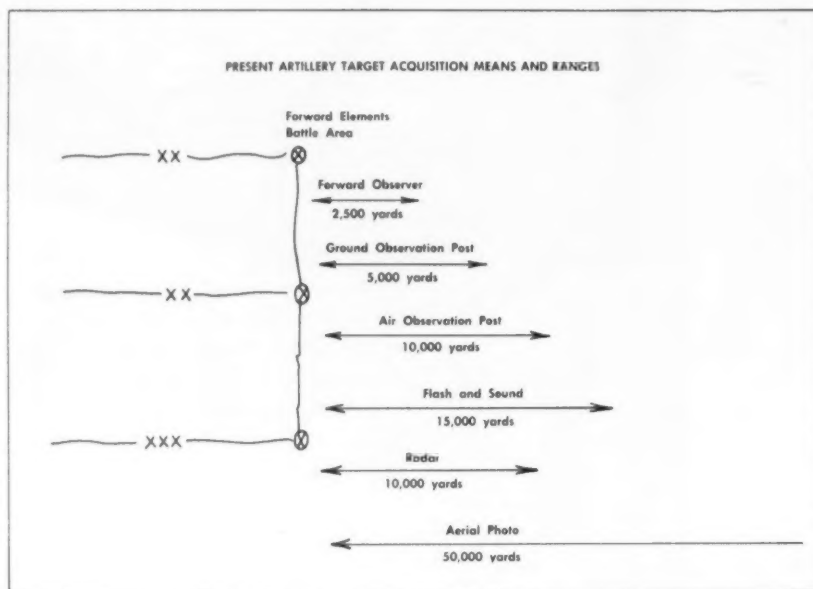
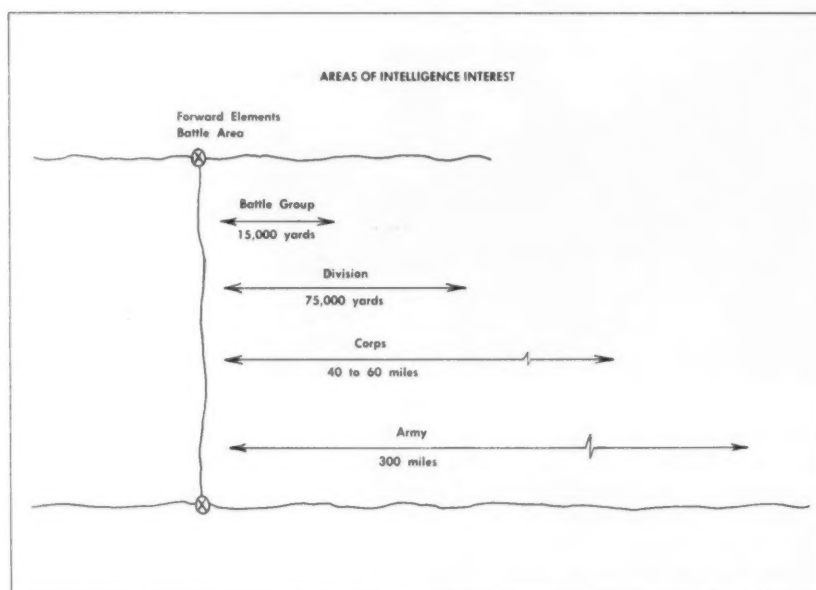


Figure 1

Figure 2



performance aircraft.

We must never forget that our potential enemies have air-defense weapons whose capabilities match our own. Both sides will also make the greatest possible use of ground cover. To meet the enemy's capabilities we need a plane that can operate within the nap of the earth and out of the enemy's radar horizon with the least reflectivity at speeds of between 200 and 300 knots. Such a craft would have a better chance of sur-

vival than a higher-speed, higher-altitude, Mach 1 or 2 machine.

The only mission of the Project Long Arm unit is to further evolve our ideas on what we need in the way of equipment, operating techniques, how to fit the aircraft into our organization, the training implications, and the tactical doctrine all of these involve.

Long Arm has toured posts in CONUS, and engaged in field exercises and demonstrations to further

evolve ideas. It has worked with infantry at Fort Benning, with armor at Fort Knox, with airborne troops at Fort Bragg, and with artillery and missiles at Fort Sill. It participated in CDEC's vulnerability tests and in Exercise Cumberland Hills during May 1958. The last-named was to determine any air-traffic control problems arising out of the Army's use of higher-performance aircraft. Also, it explored further the use of the plane in target acquisition and combat surveillance.

High-performance aircraft for the Army

The Army is developing a new machine to replace the T-37 now being used by Long Arm. This is the Grumman AO-1 Mohawk, a medium observation plane. User test quantities will become available during FY 1960, with production in numbers scheduled for 1960-61. The Mohawk's takeoff and landing performances resemble those of the L-19 or L-20. It requires 650 to 700 feet for takeoff over a 50-foot obstacle. Its speed ranges between 200 and 275 knots, and it will be able to carry, selectively, all passive target acquisition equipment now being developed, plus RADIAC equipment.

The Mohawk's only drawback is its weight (something more than 10,000 pounds when fully loaded), approximately that of the early World War II fighter. For takeoff and landing it will require pierced-steel planking, and some other type of hard surface during wet weather. It will be able to live with corps and army units in the field. These planes will be attached to divisions for missions only. That is important, because the pilot or observer must be thoroughly familiar with the current combat situation, being briefed for each mission. His visual observations will be an additional aid to the commander and his staff in interpreting what he picks up through his sensory equipment. Also, he is a source of other "by-product" intelligence. He must live with the ground action and be closely involved in its pattern and atmosphere. When future developments produce a high-speed VTOL aircraft for combat surveillance, no doubt it will be assigned to division units.

Target acquisition is that phase of aerial combat surveillance which detects, identifies and accurately locates and ties in the target, the observing aircraft, and the weapon to be used. We may have to accept a smaller degree of accuracy regarding general information gathering. But if we are to have a true target-acquisition ability, we must develop a system that can fix the aircraft precisely in relation to the target and the weapon. For this purpose, line-of-sight tactical radar won't do, because its range does not extend far enough. Also, VHF and UHF radio command control, being line-of-sight, won't reach the ranges these aircraft will fly unless the plane is within a line-of-sight altitude. Of course, use by the enemy of air-defense weapons that are radar-controlled would preclude habitual operation at altitude. We visualize Army combat surveillance aircraft proceeding to the target area on the deck, rising

to an altitude that will enable it to "see the target area."

The importance of timeliness of target acquisition in combat intelligence cannot be overestimated. In the highly mobile and dispersed combat we envision for the future, timeliness will be vital, either when attacking targets or in providing usable information for the commander. The Army must be able to extend its present combat surveillance target acquisition through means that allow instant reaction. Accurate and timely information will permit the commander to seize and take advantage of any tactical opportunity the enemy may present.

Looking to the future

In any future conflict where high mobility and tremendous firepower prevail, targets and tactical situations will arise and disappear suddenly. Reaction time will be at a premium. We cannot expect the enemy to allow us the luxury of delays that we used to accept as normal. The enemy's speed in building up and dispersing his units prohibits our further acceptance of the expectation of these delays. By using Army aircraft for combat surveillance we can reduce these delays and acquire timely information instantly and efficiently. A pilot who has been thoroughly oriented in the ground action is much better equipped for accurately judging the importance of what he sees on the ground than is one hastily brought into its atmosphere and urgency.

We cannot accept the possibility that the army commander may have to rely on another service for the combat surveillance information that is so essential to his success. To succeed he will have to know what resources are at hand, and his control over them must be absolute. Army aviation can provide this timely information by using organic combat surveillance planes. They will do much to fill in what is now a weak spot in our combat potential.

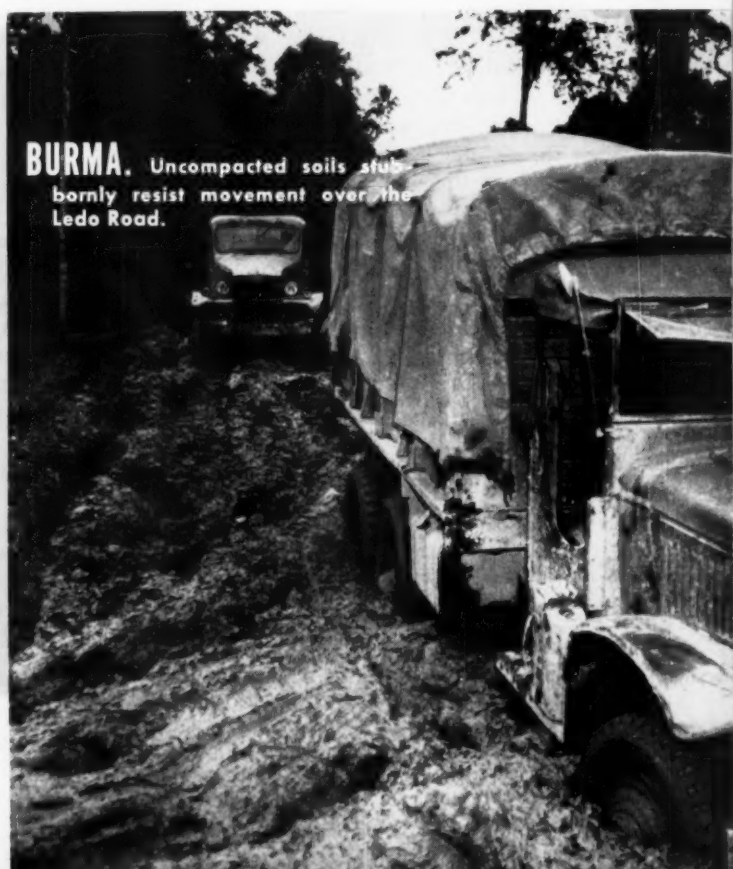
Even after delivery of the Mohawk MOA-1F, the Army will not have its ultimate target acquisition and combat surveillance plane. Just as we did in 1950, we are still seeking a vertical takeoff aircraft that can remain close to the combat unit it supports. Being part of this unit, the pilot will always know the immediate combat situation and what he is to look for when on a mission. After landing, he can be immediately interrogated by his unit's intelligence people.

Aerial photos and radar pictures can be delivered immediately to the person who must act upon the information they depict. VTOLs would eliminate the necessity for hard runways that signal to the enemy the presence of a strip that is being used by aircraft engaged in combat surveillance and target acquisition. Perhaps this vehicle will come out of the convertiplane or other VTOL developments. Whether it be deflected jet, jet flap, tilt rotor, ducted fan, or tilt wing, it is what we need and must have if we are to have aerial target acquisition and combat surveillance means that are organic.



ITALY. The viscous drag of soupy soils leaves a soldier bootless.

Mud is synonymous with battlefields, as these World War II photos demonstrate. They also demonstrate the sticky laws of terramechanics. The Land Locomotion Research Laboratory of the Army's Tank-Automotive Command's Research and Development Division measures the resistance of all kinds of soils and applies its knowledge to the design of vehicles.



BURMA. Uncompacted soils stubbornly resist movement over the Ledo Road.

How to Get Out of the Mud, Scientifically

Captain I. Robert Ehrlich

EVERY college teaches its engineering students some kind of course in strengths of materials. Tables on the modulus of elasticity of metals, wood, rubber, and many other substances can be readily obtained from engineering textbooks. Every student of elementary physics learns the coefficients of friction of wood against wood, leather against metal, rubber against concrete, and many other combinations.

But who investigates the coefficient of friction of a rubber tire against the soil, or the modulus of elasticity of clay? The mechanical engineer who designs our tanks and trucks? "That's the job of the civil engineer," he says. "Soils are not my specialty. I study engines, transmissions, springs, and chassis, but not soils."

How about the civil engineer? "Yes, I study soils and how to prepare soil foundations for buildings. I learn how to build earth dams. But as for vehicles, I stop when I learn to drive them. My job is to design roads and their bridges to carry them."

The study of soils and the relationships of soils to

a vehicle, therefore, is out in left field. Armed with only the vaguest knowledge of soil, the mechanical engineer designs the vehicle which travels over it. Until our time he has gotten away with his ignorance.

Modern vehicles travel over roads and bridges built by the civil engineer. They are off the roads for only short periods, and then they are on relatively firm ground. Despite our tremendous technological advances in engines, transmissions and electrical systems, today's vehicles are little more mobile than those of 1918. They are more reliable, but they are not more mobile in the sense of ability to cover difficult terrain.

In the future, roads and bridges will be targets for the enemy's long-range missile weapons sited many miles behind his front. Atomic strikes may neutralize entire roadnets. The long, closely controlled motor convoys of World War II and Korea will be seen no more. If men are to survive to deliver their firepower and supplies, the vehicles that carry them must be able to leave the road and travel for extended periods across country. Travel upon roads and across bridges will be considered a novelty.

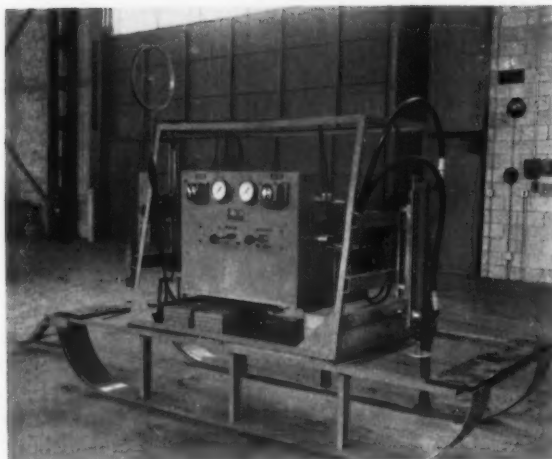
In order to achieve any significant improvement in cross-country mobility, the automotive design engineer must abandon his traditional trial-and-error methods and adopt a sound scientific method of designing. This scientific method exists. Let's outline it.

The LLSV system

The means for improving vehicle design is the new Land Locomotion Soil Values system. This was developed at the Army's Land Locomotion Research Laboratory, an agency of the Ordnance Tank-Automotive Command's Research and Development Division. This system measures those physical properties of a soil that affect a vehicle's traction. By applying these parameters in conjunction with various proved formulas that describe soil-vehicle relationships, the design engineer now may predict and therefore evaluate vehicle per-

Captain I. Robert Ehrlich, Ordnance Corps, Assistant Chief of the Land Locomotion Research Branch of the R&D Division, Ordnance Tank-Automotive Command, is a 1950 graduate of West Point. He is studying for a doctorate in mechanical engineering in the field of land locomotion at the University of Michigan. Before earning his Master's degree in Engineering at Purdue he served in Germany with the 14th Armored Cavalry Regiment.





The Army's Land Locomotion Research Laboratory uses this sled and its apparatus to measure the resistance of different kinds of soils to the traction of vehicles

formance. This can be done at the drafting table.

Land locomotion soil values are measured directly from the soil, by using a sled-like apparatus shown in the cut on this page. Later on we'll show how these soil values are used to evaluate vehicle performance. The close analogies to the sciences of aerodynamics and hydrodynamics are no accident, for this is the science of *terradyamics*.

In computing the buoyancy of a ship or the lift of an airfoil, the first step is to determine the physical properties of the water or air which will support the vehicle. The weight the vehicle can safely support is easily calculated from the properties of the substance through which the vehicle moves and the geometrical properties of the vehicle, using formulas developed by scientific research.

The "buoyancy" or "lift" of a tire or track may similarly be calculated if the physical properties of the soil and the geometrical properties of the tire are established.

Air and water being fluids, their lift or buoyancy can be determined by the principles of Archimedes and Prandtl. Soils, however, are solids, so a unique system has been established to calculate the support soils will provide.

Ground drag

When propelled through a fluid which obeys the laws of fluid mechanics, ships' hulls and airfoils produce drag forces. Therefore, it is reasonable to expect that the drag exhibited by a vehicle when propelled through soil must, as in sinkage, obey certain laws of terramechanics.

Four major factors contribute to resistance to thrust in soil: the work being done compacts the soil into a rut; the friction of the soil against the side of the tire or track; the "bulldozing" resistance of soil that is pushed in front of the vehicle and not compacted; the viscous drag of very soupy, fluid soils. We can readily calculate

these forces by using the LLSV system.

In the case of the aircraft or ship, the jet stream or propeller that develops *thrust* is independent of the airfoil or hull that produces *drag* and *lift*. Over land, a track or wheel produces all three forces.

Over finishes such as asphalt, concrete or glazed ice, the maximum tractive effort depends entirely upon the coefficient of friction that can be developed between track or wheel and hard surfaces. Over soft substances, it is not the surface between wheel or track and soil that slips; it is the soil itself that fails. This failure is characterized by two unrelated properties. One is intergranular friction, the other is intermolecular cohesion.

Soil friction forces depend entirely upon the internal coefficient of friction of soil and normal force. The cohesive forces, on the other hand, while independent of the normal force, depend solely on the internal coefficient of cohesion of soil and area of soil in shear. Here again, the physical properties of the soil and the geometric properties of the vehicle may be used to predict vehicle performance.

By a simple resolution of forces, the pulling effort of the vehicle or the vehicular drawbar-pull (DP) is the difference between gross tractive effort (H) and resistance to motion (R); therefore, DP equals H minus R. This drawbar-pull can also measure the traction of the vehicle on a given soil. If DP is zero, the vehicle is immobilized. If DP is high, the vehicle may traverse the terrain with ease. A low DP means traction is marginal. DP divided by weight (W) immediately gives the vehicle's maximum slope-climbing ability and acceleration performance. DP also indicates the effect of any trailers attached to the vehicle. The vehicle's maximum speed on a given soft terrain is governed by the motion resistance (R) and the available horsepower (HP).

Vehicle design or evaluation

The Land Locomotion Soil Values system makes it possible to design or evaluate a vehicle's performance on any type of terrain. The equations used to describe soil-vehicle relationships are not simple ones, but neither are those used in aircraft or ship design. Their derivations are even more involved. Wouldn't it be foolish to build an aircraft without first calculating lift, drag, and thrust values? Therefore, we must design land vehicles in the same way. We see the tremendous strides that have been made in aircraft and ship propulsion through scientific research and design. The same strides can be made in our cross-country mobility only if we apply the same scientific principles.

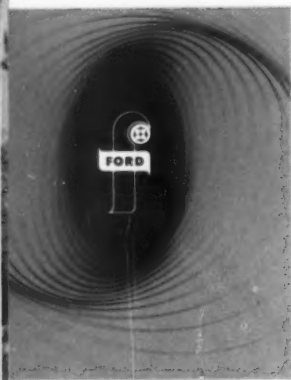
We can use the LLSV system to arrive by theoretical means at very many possible or potential solutions in order to achieve optimum design. LLSV affords a unique opportunity for shortening the time required to develop vehicles. It would also save great sums that would otherwise be spent in extensive building and proving of test vehicles.

MILITARY SYSTEMS CAPABILITIES



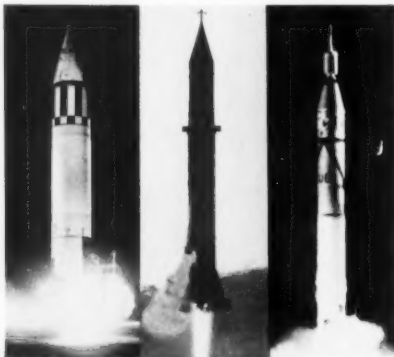
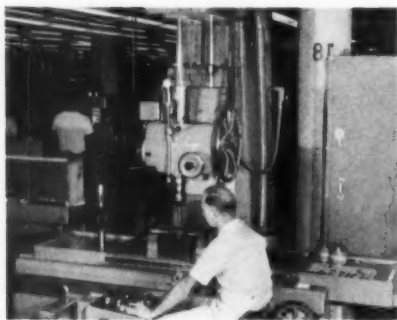
FORD INSTRUMENT CO.
DIVISION OF SPERRY RAND CORPORATION

Ford Instrument aero-space capabilities



Wide experience in these vital new missile and aero systems equips Ford Instrument for major responsibility in the most advanced fields

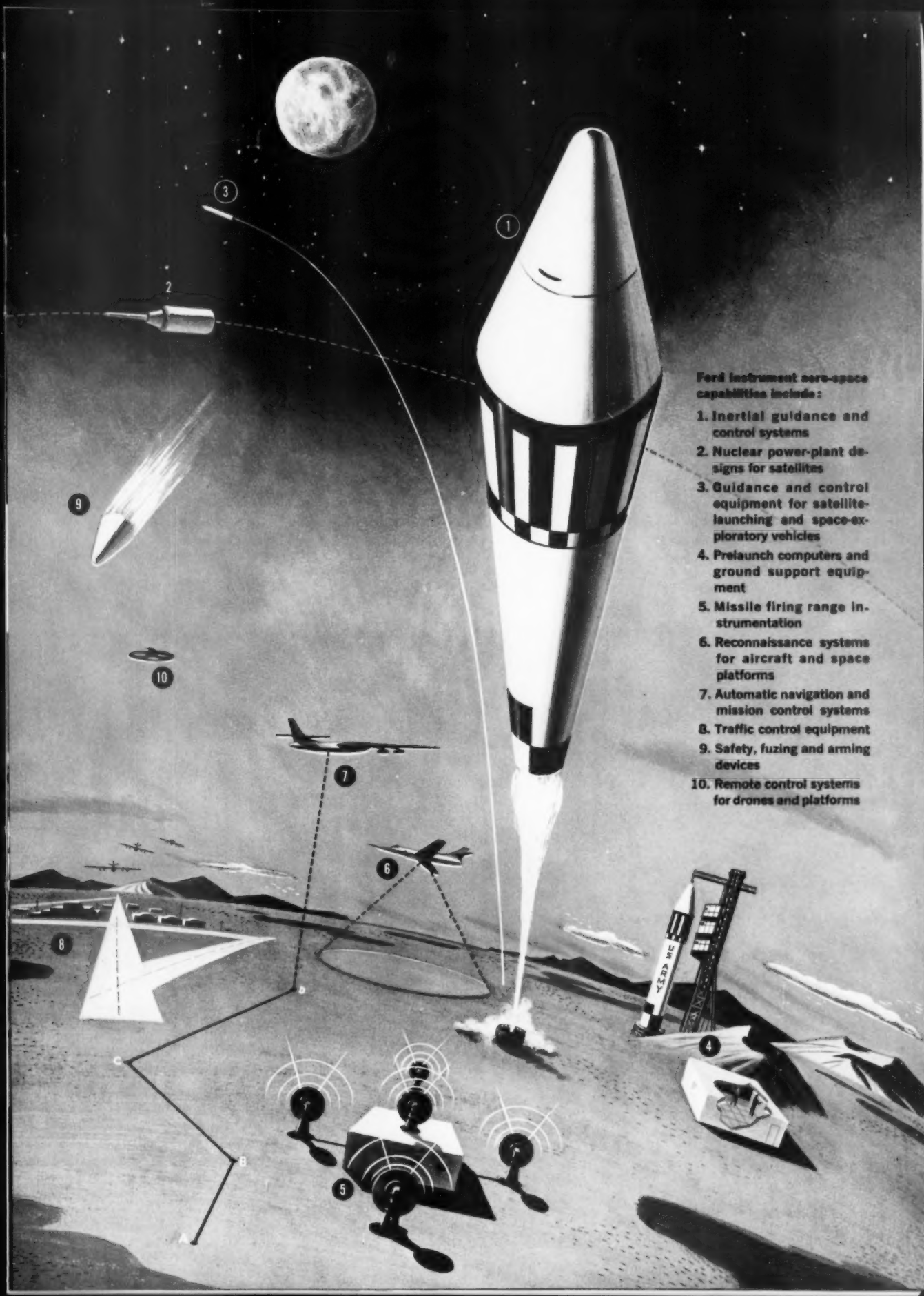
Ford Instrument Co., Division of Sperry Rand Corporation, offers defense agencies a background of *44 years' continuous experience* in initiation, development and quantity production of military equipment and weapons control systems. Today, in the dawning space age, Ford Instrument experience, as outlined in the illustration opposite, already encompasses a wide variety of activities in the forefront of this field. Notable are inertial guidance and control systems for the U. S. Army Ballistic Missile Agency's REDSTONE and JUPITER missiles, developed with ABMA and manufactured by Ford Instrument; many guidance and control components on the Army's satellite-launching JUPITER C; navigational systems in wide operational use by the U. S. Air Force; and many highly advanced activities such as research into new types of inertial guidance systems for USAF's WADC Weapons Guidance Lab.



DEVELOPMENT — Top photo. Gyro for stable platform under test in development lab. Ford Instrument is also designing advanced inertial guidance systems incorporating new concepts.

MANUFACTURING — Center photo. This photograph shows machining of piece for JUPITER stable platform . . . in one of Ford Instrument's many precision production shops.

END USE — Ford Instrument manufactures guidance and control systems used in JUPITER (left), REDSTONE (center) and many similar components in JUPITER C (right). Ford Instrument has worked closely with the U.S. Army on these ABMA-developed missiles. (U.S. Army photos.)



Ford Instrument Aero-space capabilities include:

1. Inertial guidance and control systems
2. Nuclear power-plant designs for satellites
3. Guidance and control equipment for satellite-launching and space-exploratory vehicles
4. Prelaunch computers and ground support equipment
5. Missile firing range instrumentation
6. Reconnaissance systems for aircraft and space platforms
7. Automatic navigation and mission control systems
8. Traffic control equipment
9. Safety, fuzing and arming devices
10. Remote control systems for drones and platforms



Ford Instrument ground systems capabilities

New methods of attack on military problems require a wide range of engineering skills . . . mechanics, electronics, optics, computer technology

New weapons and materiel are changing the techniques of ground warfare today as at no time in past history. The unique capabilities of Ford Instrument in automatic control and computer systems are being put to use in implementing and shaping new concepts of ground warfare. Some of these capabilities are shown in the artist's conception below. Notable Ford Instrument experience includes: Development of a system for control of aerial drones for combat surveillance and reconnaissance; development of a computer for vehicle navigation in trackless wastelands; and inertial guidance and control for the REDSTONE tactical ballistic missile.





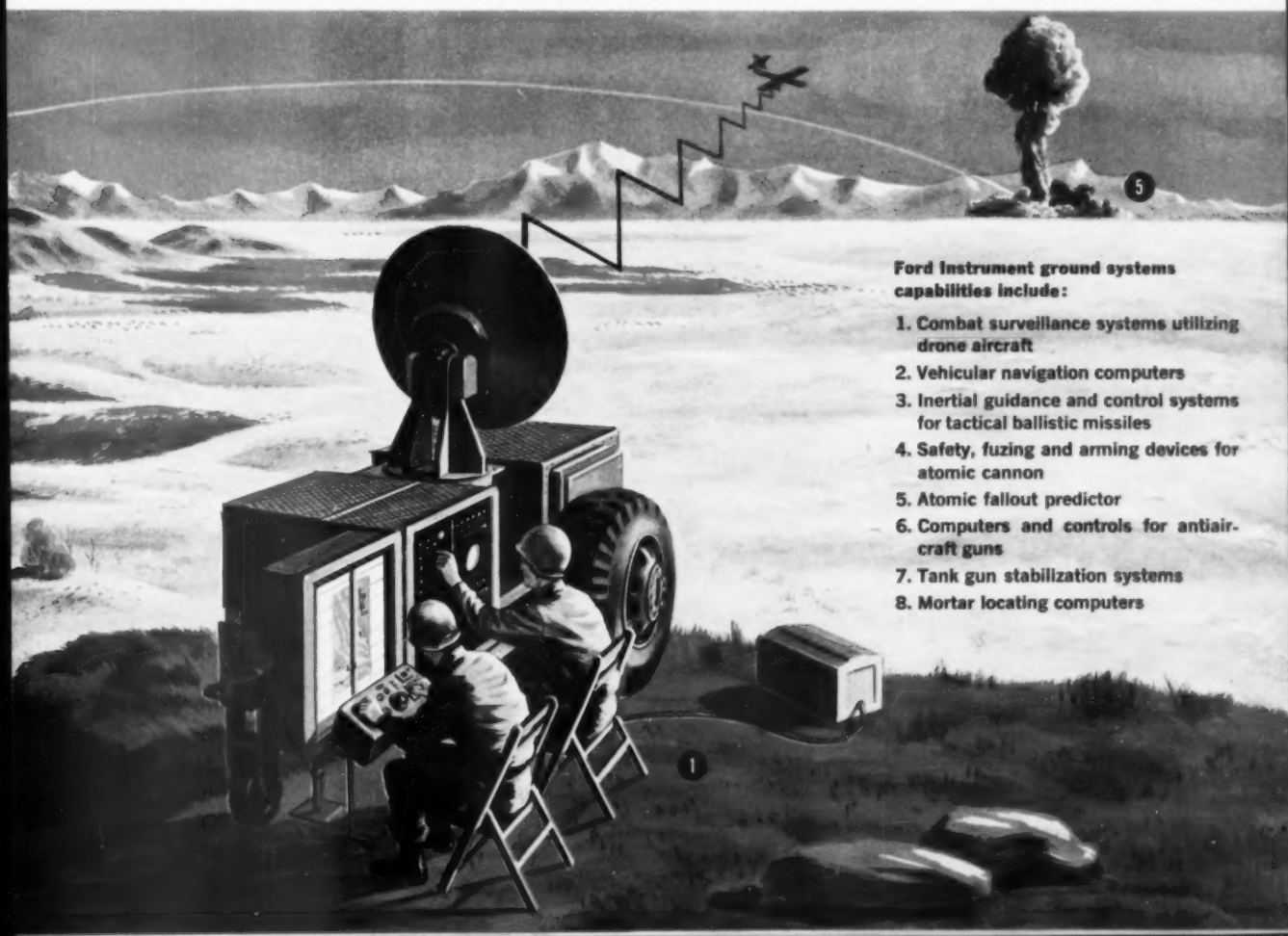
DEVELOPMENT—Trailer for combat surveillance (drone control) system. Ford Instrument worked with U.S. Army Signal Corps on this system, comprised of radar, tracking, telemetering, computing, plotting and control equipment.



MANUFACTURING—A step in the manufacture of a precision computing cam. Ford Instrument has extensive facilities for precision machining, is widely experienced in both electronic and mechanical computer techniques.



END USE—U.S. Army atomic cannon shown at test firing. Ford Instrument developed and produced complex safety, fuzing and arming device for this weapon, is one of few companies with wide capabilities in warhead control work. (U.S. Army photo.)



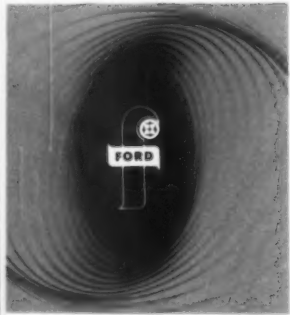
Ford Instrument ground systems capabilities include:

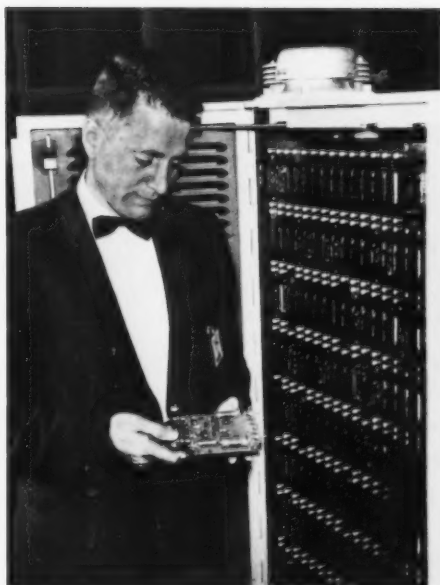
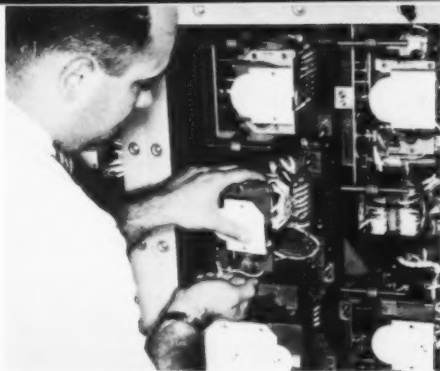
1. Combat surveillance systems utilizing drone aircraft
2. Vehicular navigation computers
3. Inertial guidance and control systems for tactical ballistic missiles
4. Safety, fuzing and arming devices for atomic cannon
5. Atomic fallout predictor
6. Computers and controls for anti-aircraft guns
7. Tank gun stabilization systems
8. Mortar locating computers

Ford Instrument naval systems capabilities

Ford Instrument has over four decades of experience in development and production of complex computer and control systems for U. S. Navy weapons

Ford Instrument experience in naval systems encompasses complex equipment for all phases of naval warfare—surface, air-defense, and underwater. Ford Instrument's long history of working with the U. S. Navy began with manufacture of one of the earliest analog computers for solving fire control problems (Range Keeper Mk 1, circa 1915). Today, Ford Instrument's naval systems activities continue with development and production of such vital modern equipment as the launching and control order computers for the Navy TERRIER and TARTAR missiles, control rod drives and other instrumentation for atomic submarines, plus a wide variety of operational fire control equipment for naval guns and rockets. Some of these advanced naval capabilities are shown on the panorama below.

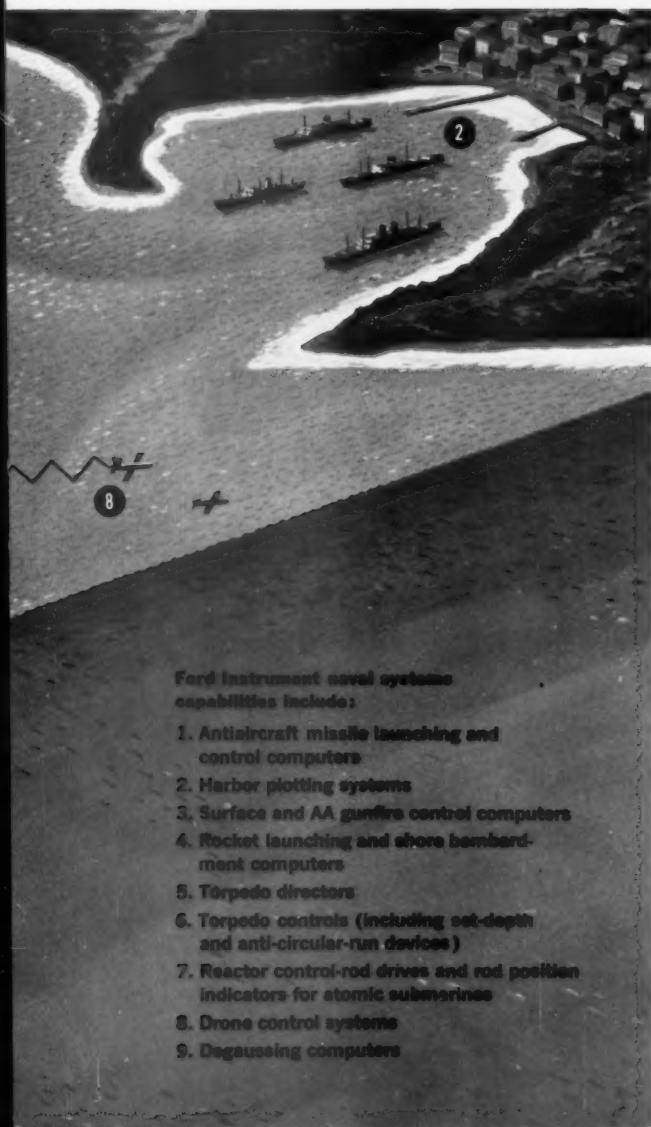
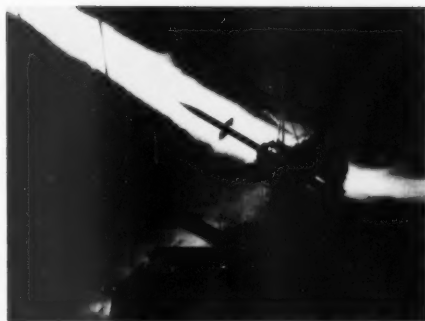




DEVELOPMENT—*Photo above.* Electronic section of the all-transistor computer developed to solve launching and control order problems for TARTAR missiles. Note ultra-compact modular construction which greatly facilitates maintenance.

MANUFACTURING—*Top photo.* A technician makes final check-out on Mk.47 AA and surface gunfire control computer before delivery to U.S. Navy. Ford Instrument is one of a few companies having thorough experience on *all* types of computers and control systems—electronic, electro-mechanical, mechanical, hydraulic.

END USE—*Left photo.* Night firing of U.S. Navy TERRIER missile. Ford Instrument is proud of its part in the production of the vital TERRIER-TARTAR weapons systems for fleet air-defense. (*U.S. Navy photo.*)



Ford Instrument naval systems capabilities include:

1. Antiaircraft missile launching and control computers
2. Harbor plotting systems
3. Surface and AA gunfire control computers
4. Rocket launching and shore bombardment computers
5. Torpedo directors
6. Torpedo controls (including set-depth and anti-circular-run devices)
7. Reactor control-rod drives and rod position indicators for atomic submarines
8. Drone control systems
9. Degaussing computers

One in five Ford Instrument employees is engaged in engineering activities. Many of our top executives are engineers. Since a crucial part of the work of Ford Instrument is in solving engineering problems that have never been solved before—many of them, today, related to space conquest and exploration—advanced engineering talent is the most important asset the company has.

...about Ford Instrument people

Many of our engineers have more than 20 years' experience. Yet it's worth noting that the average age of the Ford Instrument engineering staff is only a little over 30. When you place your engineering, development or manufacturing problems in Ford Instrument's hands, you are assured of a vital, flexible approach with solutions thoroughly checked and "debugged" by seasoned military systems engineers.

We invite you to learn more . . .

Responsible agencies or industries, possessing the requisite security clearance and need to know, are invited to learn more about Ford Instrument military system capabilities. Ford Instrument Liaison Engineers are always ready to discuss your new or special requirements, and will be glad to provide you with detailed information on specific product capabilities.



FORD INSTRUMENT CO.

DIVISION OF SPERRY RAND CORPORATION

31-10 Thomson Avenue, Long Island City 1, New York

Field Liaison Engineering Offices

DAYTON, OHIO	•	HUNTSVILLE, ALA.	•	LOS ANGELES, CALIF.
Ford Instrument Co.		Ford Instrument Co.		Ford Instrument Co.
29 West 4th St.		c/o U.S. Army		260 South Beverly Dr.
Dayton, Ohio		Ballistic Missile Agency		Beverly Hills, Calif.

A CREATIVE TEAM OF SCIENTIFIC, ENGINEERING AND PRODUCTION TALENT

PRINTED IN U.S.A.



**TACTICAL ATOMIC FIRES
FOR THE BATTLE LEADER**

**DOES HE
OR
DOESN'T HE
GET 'EM?**

Are tactical atomic weapons to be as much a part of the commander's unit as Company A? Or are they just so much gravy to be spread on top of conventional ground support artillery fires when they happen to be available? An answer to this question will be vital to the planning of battle commanders

OUR approach to the tactical use of nuclear firepower is very well stated in general terms: we will closely integrate it with nuclear-free fires in support of ground troops. That's what we say. But I say we don't do it.

Here is the approved concept of the tactical use of nuclear weapons:

"The plan for atomic weapons employment both supports and influences all other elements of the plan of operations. When atomic weapons are available, the plan of maneuver or the plan for disposition of forces and the plan for atomic and nonatomic fire support are inseparable and must be prepared concurrently. Availability of atomic fires may favor the adoption of an operations plan which would otherwise be impracticable. The battle group commander may find that his plan of maneuver or plan for disposition of forces will be based upon or significantly influenced by the atomic fire plan of a higher headquarters."

That quotation is from the advance sheet of a service-school course in battle-group tactics. I don't think it could be better stated. We accept the nuclear weapon as one of a family to be used by ground troops, though certainly because of its power it is the most important. In our planning we must consider these other weapons and the disposition of our forces. The destructive power of nuclear fire makes possible operations which would not otherwise be attempted. Unfortunately, the gap between theory and practice has not been closed by this excellent concept of battle-group atomic tactics.

A study of certain problems presented at our service schools reveals a glaring omission. Occasionally we seem to realize that nuclear weapons are in the game and make some adjustments to protect against an enemy strike. However, these problems do not require shifting of forces with the thought of making more effective use of *our own* nuclear weapons. Our thinking on the question is negative when we dispose our forces for defense. We seem to have forgotten that we can use nuclear weapons and that they might influence our plan.

The characteristics of each weapon must complement those of the others we use, if we are to obtain the most powerful total effect. If we accept the theory of a family of weapons, then we must apply the same idea to any specific tactical situation.

Captain Robert T. Fallon, Infantry, is on duty with the ROTC at Canisius College in Buffalo, N. Y. He wrote "Tactical Problems of the Pentomic Battle Leader" in our August 1958 issue.

Troop commander's dilemma

Let us consider a unit in defense under atomic conditions. How can we integrate our nuclear fires into our defense plan? How will these weapons influence the use of others, and the disposition of our units?

In our scheme of integration, we scatter goose-eggs and "Desired Ground Zeros" all over the landscape beyond the forward edge of the battle area, then tell the battle-group commander there's a good chance he might get four or five or six nuclear weapons of varying yields to blast these DGZs. But he must not count on them! The same advanced sheet we have quoted also says:

"In integrated atomic and nonatomic fires available to the battle group, the battle group commander must consider that planned atomic fires may suddenly be withdrawn. . . . Since the success of the over-all operations plan may depend upon the availability and employment of certain atomic fires, the plan will have to be altered, revised, and perhaps discarded entirely if these atomic fires are not employed."

The ultimate weapon theory

This is all right, of course, if you accept the proposition that the only difference between nuclear and nuclear-free combat is the shifting of two out of 12 platoons a distance less than the range of an M1 rifle! That is the Ultimate Weapon theory, which says in effect: "Do everything just as you always have. If you can get nuclear fire, that'll be gravy."

Is this the integration of nuclear and nuclear-free fires we hear so much about? How can the commander possibly integrate so important a weapon into his battle group's plan if he is told there's a good chance that he may not get that weapon? His position is like that of the sprinter who is told he must train hard but that he'll be allowed to use only one leg during the race. If the battle group commander is to integrate so powerful a weapon into his plan of fires and his disposition of troops, nuclear firepower must of necessity be an essential part of his armament. If he can't depend upon its use, why include it in his plan?

True integration of nuclear and nuclear-free fires requires setting aside certain available atomic warheads for use much as we now employ artillery barrages. These weapons must be committed to certain DGZs, to be fired under circumstances determined by the commander of the unit in whose area of responsibility they are to fall. They must not be withdrawn except in extreme emergency. They are as much a part of his unit as Company A or the fires of his direct support artillery. Their withdrawal would necessitate adjustments in the defensive plan more basic than those which would result from the loss of half of the force or the shifting of all artillery missions in the midst of their final protective fires.

To be more specific, a division commander who has, let us say, ten nuclear weapons for any 24-hour period will commit four of them to specific DGZs in the battle

area, retaining the other six for his own use. These committed weapons can then be incorporated into the battle plans of both division and battle group. Unit boundaries can be adjusted accordingly, supporting fires planned to complement these bursts, and troops disposed so as to take advantage of anticipated effects. Battle-group commanders who find these DGZs within their sector of responsibility can plan on their use. Those defending a sector for which the use of no weapons is planned can adjust their fires and dispose troops accordingly. In this manner nuclear firepower is given equal weight with other factors when preparing a defensive position. They are not just thrown in as extra insurance after everything else has been considered.

Advantages in this method

Many advantages can accrue from such a method. Most important is that we will be able to use this firepower close to and *within* our own positions with less



danger to our own troops. The front-line soldier will know that an atomic burst of a certain force will be placed on an *exact* spot—not so many hundred yards from here or there, or to the right or to the left. He can dig his protective hole accordingly and conduct his defense in the assurance that his weapon is there to use when he needs it, just as he is sure of needed planned final protective fires, or that the 1st Platoon is on his left and Company A is on his right. He will know pretty well what circumstances require the use of this firepower, and will have planned the action to take. If no weapon is assigned his sector he will fight his battle in full confidence that no nuclear warhead will hurtle over his head when he is unprepared—at least not a friendly one. His sense of security will increase as he realizes more and more that this weapon is part of the scheme of things, a portion of the defensive plan upon which he can depend.

There are other advantages. There will be less need for wholesale shifting of units before the nuclear warhead is fired, since dispositions will have been planned with this fire in mind. Commanders will be better able to use the weapon when and where it is needed, since delivery time will be diminished considerably. Since this firepower will be in place, more direct communications can be established between requesting headquarters and firing position. There will be less need for formal clearance for firing since the weapon will have already been committed. The commander will be less uneasy about firing it so close to or within his lines because it will be easier to inform his troops. Troops can be trained to be alert for a prearranged signal and the clearances required before firing can be reported promptly.

Do we really understand?

There are certain disadvantages connected with this method, the most obvious being the loss of flexibility in the nuclear fire plan. A warhead on its ramp and ready to fire at a certain DGZ can not be diverted to other targets. A commander is understandably reluctant to surrender such a decisive weapon, to relinquish control of an ace-in-the-hole, even in part. The difficulty is less acute when enough weapons are available, but regardless of the supply, a definite loss of flexibility still remains. As we have said, however, this fate is common to all weapons that are part of a closely coordinated battle plan. Each piece in the family of weapons loses a certain amount of freedom. We must be ready to accept conditions that are less than ideal for its use if our over-all plan is to gain added strength. If nuclear firepower is to be truly integrated, we must accept limitations on its use.

There is an equally important reason why this method is not used. I believe there is a basic misunderstanding of the weapon. The tactical nuclear warhead is not just a bigger artillery round. There are fundamental differences in the capabilities of atomic and nonatomic fires. Nuclear fire can be used to hold

ground. We can depend upon it to stop an attack coming from the area on which it is placed. A force armed with a nuclear weapon can defend a much larger sector than can a force without one, because a portion of the area may be left virtually unoccupied so long as it is covered by a committed DGZ or an atomic mine. The commander who uses the weapon in this manner is compelled to look upon his plans in a new light; that is, in terms of *his atomic capability*.

This is the difficult part. Such a method demands that the commander have a basic understanding of the weapon he is using. He must not only know what the weapon can and cannot do; he must have the tactician's grasp of how these characteristics affect his consideration of terrain, the employment of his other weapons, and the disposition of his units.

New factors in planning

His planning process will involve some new factors. What does he want to achieve? To hold a portion of his sector by using this weapon? Then he must know the weapon's effectiveness when used over various types of terrain. He will have to determine which portions of his sector are most critical, and weigh whether these parts can be best defended by nuclear firepower alone, by troops on the ground, or by a combination of the two. If he plans to use them in combination, he must determine where to site his atomic weapons so that they will best complement the efforts of his troops.

Has he the mission of destroying as many of the enemy as possible with little thought of holding ground? In such a case his use of the weapon and of his troops will be quite different. He must select the spot where his burst must hit. Is this spot to be forward of his position or within it? Once he chooses the area where he will use his troops and nuclear-free weapons, how does he entice the enemy into it? How will the enemy react? The commander must be prepared to seize every advantage from the effects of the weapon he decides to use.

Further questions arise: Once he has determined his DGZ, does he reveal the position to the enemy, as we often do a mine field, or does he conceal it in hopes of attaining surprise? Will the function of nuclear-free fires change at the burst, thus requiring two sets of planned fires—before detonation and after detonation?

These questions do not occur to a commander who is concerned solely with adjusting his positions so that he will not be hurt too much by enemy nuclear attack. If questions like these do not arise, we are not practicing true integration!

If we believe nuclear firepower can be used as part of the tactical scheme, then let us begin seriously to plan to achieve its integration. We cannot preach the need for integration of fires only to forget the whole idea when faced with a decision on the battlefield. If we are to integrate nuclear and nuclear-free fires, let's get going. If we are not, let's stop talking about it!



Sergeant Edward Lee Alley, conductor of the Seventh Army Symphony, runs the orchestra through a brisk rehearsal

THE SEVENTH ARMY SYMPHONY

Musical Ambassadors, Soldiers, Too

JAMES I. KENNER

IT was a hot, dusty afternoon when the two olive drab buses filled with American soldiers invaded the small town in West Germany. The buses rumbled along the narrow, cobblestone street which ran through the center of the town and halted at the city square.

As the troops filed from the buses onto the sidewalk the town folk stared curiously. Instead of weapons the troops were carrying violins, tubas, drums, music stands and a box filled with music scores.

James I. Kenner, a free lance writer now travelling in Europe, was recently discharged from the Army upon completion of his two year tour of duty. During part of his military service he was on the public information staff of the Seventh Army Symphony Orchestra.

That evening more than a thousand German citizens attended a concert offered by these uniformed musicians. When the final chords of music faded the audience filled the sudden silence with a long, hearty ovation. Many of the residents of that small town that night gained a new insight into the character of the American people and its United States Army.

An official of the American Consulate General's office mentioned that particular concert in a letter to General Bruce C. Clarke, who at that time was commanding the Seventh Army. He wrote:

"... the audience in all cases gained new respect for the American soldier as an individual and artist, and for the armed forces in general for promoting and fostering this kind of un-military activity."

The young men who staged that concert were soldier-musicians, members of the Seventh U.S. Army Symphony Orchestra stationed at Army headquarters in Vaihingen. They would not especially appreciate the official's reference to "un-military activity" for they take pride in the fact that they are trained soldiers as well as musicians.

These soldier-musicians have been bringing before many

European audiences a good representation of America's culture—and of her way of life.

As one music critic who attended a concert in the city of Kirm, Germany, explained, "Nothing is more suited to creating better understanding between people than good music."

The Orchestra was founded for the purpose of providing entertainment to American soldiers stationed in Europe. But even as it accomplishes this primary mis-

sion, it continues to win friends for America.

For seven years it has been providing good music before military and civilian audiences throughout Germany, and in many major cities in France, Italy, The Netherlands, Luxembourg, the United Kingdom, Greece, Austria and Denmark. The orchestra has traveled more than 50,000 miles, and has been heard by almost a half-million persons.

The majority of the Symphony's concerts have been presented in Germany. Sometimes they are given in small towns where Germans have not had much contact with Americans. In such instances the average reaction of the audience to the Symphony is surprise—followed by a respect for these young soldier-musicians who perform with all the finish of a professional orchestra.

Many European concert-goers who are steeped in a tradition of classical music find it difficult to believe that United States Army soldiers can cope with works by such masters as Beethoven, Brahms, Tschaiikowsky and Mozart.



A young fräulein presents a bouquet to the orchestra at the conclusion of a performance in a German town. At right Captain Paul P. Gotowicki, the company commander, inspects the musicians

"Hats off to these Americans!" wrote a newspaper columnist from Reutlingen, Germany. "They teach us to abandon traditional prejudice with pleasure. We have caught their spirit of good will."

It is also difficult for civilians in the audience to grasp the concept of soldier-musicians. Said a Nürnberg music critic:

"There is always a very peaceful atmosphere around classical musicians. One can hardly imagine that one day these men may be commanded to take up their arms in order to fight in some decisive battle somewhere in the world."

The men in the Orchestra are highly qualified musicians. They come from all walks of life, and share an understanding and a liking for classical music. Many are graduates of American universities and colleges; many have studied at leading conservatories throughout America; many were members of well-known symphony orchestras before they came into the Army. But as members of the NATO Forces in Europe these men are also trained soldiers.

As soldiers they have gone through the rugged training program required by a modern Army. They have learned how to use their weapons. They have been oriented in basic subjects like CBR training, first aid, squad tactics, map reading, cover and concealment. Many have taken advanced training.



For example, there is Sergeant William M. Love from Beverly Hills, Calif. He is the Orchestra's current manager. He received training as a radio teletype operator with the 97th Signal Battalion.

There is Specialist Fourth Class Anthony Z. Miller, violinist, from Perth Amboy, N. J. He was formerly a medic with the 33rd Tank Battalion, 3d Armored Division, in Germany; Private First Class Edward S. Kechejian, violinist from New Rochelle, N. Y., served with an artillery unit in Germany. Private First Class John Yang, a New Yorker who plays the cello, had been serving as a draftsman at Fort Dix, N. J.

The Symphony is a regular military unit under the command of Captain Paul P. Gotowicki. It operates under standard military SOPs. Its members are fully disciplined.

The Seventh Army Symphony Orchestra has been hailed by *Time Magazine* as "An Orchestra that can be compared with the best in Europe." Since its founding the Symphony

has given five performances at the world-famous Passau European Week's Festival. It has played before a crown prince, princesses, a queen mother, and a host of American and European dignitaries. Both the European and the American press have praised its musical ability.

"This group of young Army musicians has done more than any other single military unit in Germany to promote a better cultural understanding between the American and German peoples," according to Dr. James B. Conant, former U. S. High Commissioner to Germany.

A 1958 highlight in the Symphony's career was its performances at the Brussels World's Fair. Under the baton of its 23-year-old conductor, Sergeant Edward Lee Alley, the Orchestra presented three concerts before an international audience. Perhaps by performing there it indirectly answered a question once posed by a German music critic:

"Are these soldier-musicians not more successful conquerors than those with rockets and atomic bombs?"



The orchestra prepares for an outdoor performance amid magnificent scenery



Self-propelled 105 firing in the Italian mountains during World War II. Today the armored artillery have a much improved SP howitzer—the M52 mounted on its own special chassis

New Firing Tests for Armored Artillery

CAPTAIN RICHARD J. POTTER

THE secondary road in Western Germany is dusty and empty. But not for long. Faintly at first, then with increasing volume comes the sound of armor-tracked vehicles on the move. Into view down the road rolls the source of this sound, an armored field artillery battery of self propelled howitzers and accompanying vehicles, on the march.

Suddenly the howitzers plunge from the road and sweep into an adjacent field. With practiced speed they arrange themselves while gunners rush about in the multitude of tasks involved in an artillery occupation of position.

In less than five minutes from the instant the first motor carriage swerved from the road into position there is the sharp bark of a howitzer, its muzzle

wreathed in smoke and flame, its carriage rocking momentarily back on its tracks. A fire mission is under way.

This is not World War II. It is the summer of 1958, at the Seventh Army Training Center in Grafenwöhr, Germany, and the battery, from a battalion of the 4th Armored Division Artillery, is engaged in the Division's concept of an appropriate battalion training test for armored field artillery.

Conceived in 4th Armored Division Artillery, under its commander (Brigadier General William F. Ryan), with encouragement by the division commander (Major General Andrew P. O'Meara), himself a long-time artilleryman, the Division's experiment more fully tests and exploits the maximum capabilities of armored artillery than does the present Army Training Test 6-5.

Examining the 4th Armored Division test, the old-time armored artilleryman will gladden to the realization that once more armored artillery is recognized for its special capabilities.

Communication in this test is largely by radio. Observers are truly *forward* observers, mounted in tanks or armored personnel carriers, with occupation of fixed, elevated observation posts kept to a minimum.

Safety time out—that tempo-destroying bugaboo of artillery tests—has been largely eliminated, thanks to an ingenious plan of pre-staked safety bays.

Situations are fluid and changes in situation require abrupt alterations in artillery plans. Artillery positions in preparation are abandoned; unscheduled occupations follow receipt of the magical words FIRE MISSION.

Captain Richard J. Potter, Artillery, was an enlisted man with Eighth Air Force during World War II and a forward observer and FDC instructor to the Ethiopian Forces in Korea. He has served with several armored artillery battalions and is currently a battalion assistant S3 with 4th Armored Division Artillery in Europe.

Speed is stressed

Speed, the spirit of armored artillery harkening to days of short-based ranging rockets and high airs for orientation, is stressed with no diminishing of respect for survey and such niceties as meteorological and velocity error corrections.

Where ATT 6-5 allows full credit for a light artillery mission completed in eight minutes (from observer's identification of target until battery or batteries are ready to fire for effect), the 4th Armored Division's test cuts this time by three minutes. Full credit is allowed only if time from identification of target to completion of fire for effect (including time of flight of projectiles) does not exceed five minutes. Allowable time for registrations is similarly reduced in the concept of the 4th Armored Division's test.

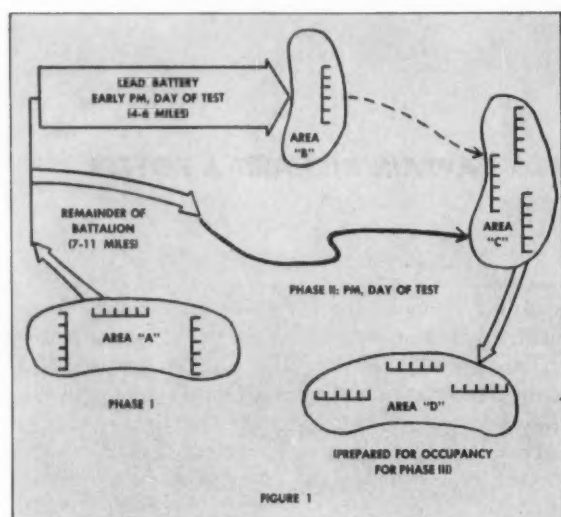


FIGURE 1

Occupation of position is similarly speeded up. Where ATT 6-5 allows a light, self-propelled battery seven minutes in a rapid occupation of position, and ten minutes for a medium battery, the proposed test allows light batteries five minutes, medium SP batteries only six minutes.

As General O'Meara has said, "Times . . . are admittedly difficult to meet. They are based on a perfect performance since it is felt that only a perfect performance . . . should receive full credit."

Five situations

The 4th Armored Division's test confronts the armored artillery battalion with no less than five general situations:

- ¶ Preparation of a position area for a deliberate occupation under cover of darkness.
- ¶ Occupation of a position to provide all-around fire support to a combat command in a coiled position.

- ¶ Function as part of a combat command in a movement to a meeting engagement, providing artillery support to three armored task forces by rapid movement from march column to deliver rapid and timely artillery fire.

- ¶ Providing continuous fire support while displacing.
- ¶ Deliberate occupation of position after darkness.

Phase I

During this phase the artillery battalion commander meets the chief umpire at or after daylight near a position area (Area D, Figure 1) that is to be prepared for deliberate occupation after dark. Preparation for night occupation and reconnaissance for observation posts is commenced, with survey to be completed by 1400 hours.

Coincident with preparation for the deliberate night occupation, the battalion commander is given a new situation and ordered to occupy a position by 1200 hours (Area A). He must have that area fully operational so as to provide all-around artillery support to a combat command in a coiled position. Six forward observer sections join infantry or tank companies (simulated) and two OPs are airborne.

Six hours before dark a new tactical situation requires the battalion to take up an approach march to meet an unexpected enemy threat. One battery takes up position in a (simulated) combat command advance guard, while the remainder of the artillery battalion is four to six miles in rear of the advance-guard battery. Forward observers with advance-guard task forces and air observation posts are active.

Phase II

As the battalion is moving forward, its leading elements run into opposition. Two targets are identified to the lead battery, which makes hasty occupation of position (Area B) and fires on the two targets of opportunity—one adjusted by ground observer, one by air observer.

While these targets are being attacked, the chief umpire requires the remainder of the battalion to move and occupy a forward position (Area C). As the two remaining firing batteries approach Area C, each is given a target of opportunity. The two batteries make hasty occupations of position and attack the targets. Concurrently with these missions, the original battery in position receives another target that was being fired on from Area B. Battalion personnel in Area D and its OP area are at this time recalled to the battalion.

The battalion commander then orders the battery in Area B to move forward and join the rest of the battalion in Area C, where a rapid position area survey is completed and a registration conducted, followed by a battalion mass mission, firing of a transfer, and a high-angle mission on a target of opportunity.

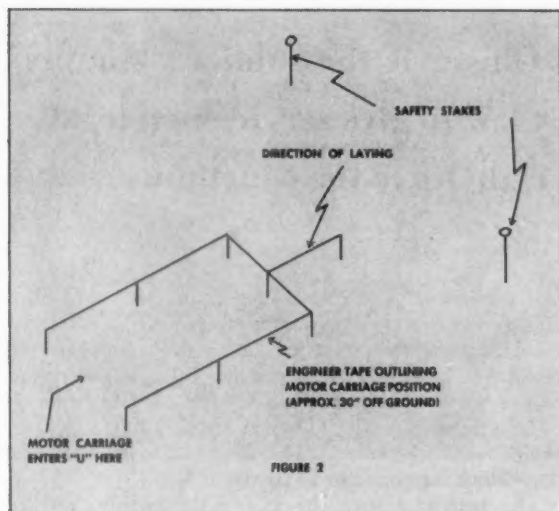
Two hours before dark a new situation is presented, requiring the battalion to occupy an initially prepared position (Area D) after dark.

Phase III

This commences with the battalion making a black-out march to prepared Area D. Firing in this position includes a battery concentration with metro and velocity effect (VE) corrections; a high-burst registration; illumination of a restituted target by one battery while the remaining two batteries fire for effect on this target; fire for effect on a second restituted target; conduct of a center of impact (CI) registration after daylight; and a battery concentration on a target located by the battalion survey base. A battalion time-on-target (TOT) fired on call of the chief umpire concludes the test.

Eliminating safety time

The key to maintaining the momentum of armored artillery operations in the 4th Armored Division's test has been the elimination of most of the frustrating "umpire safety time" common to artillery testing both overseas and in the Zone of the Interior.



Condemned by General O'Meara as giving "young officers and . . . enlisted men . . . a wholly erroneous concept of the alacrity and promptness with which artillery fire must be delivered, especially in armored action," safety time has been almost eliminated by the use of surveyed and staked "safety bays" for positioning motor carriages.

Before testing the artillery battalion, the test team determines the type formation (hexagon, star, lazy-W, or other) preferred by battalion and battery SOP. Position areas to be occupied are then surveyed and a place for each piece selected in accordance with the desired pattern.

Each piece's position is then marked with engineer tape forming a U (Figure 2) so dimensioned and oriented with aiming circle that the motor carriage, when driven into the staked box, is correctly positioned

in the direction for laying, direction of laying being marked by tape.

Safety stakes are already placed so that safety officers, by ascertaining that turret shifts do not traverse outside of these stakes, can readily determine that fire will be within safe deflection limits.

Utilizing a relatively large number of carefully trained safety officers and the safety bays, 4th Armored Division Artillery in its 1958 battalion tests proved that they can be conducted with almost no time out for safety officers. This contrasts with previous toleration of as much as twenty minutes' delay for safety purposes after a battery reached position.

Although it may be argued that the safety bays introduce an artificiality, practice has proven they provide no advantage to the tested unit, and no one has suggested a better means of eliminating safety time.

Grading and evaluating

Gunnery, including speed in occupying a position, firing, survey, conduct of fire, and operation of fire direction centers, is worth eighty per cent of the test grade. Other aspects of the test—tactics and communication—constitute twenty per cent.

In submitting the proposed armored field artillery battalion test to VII Corps last spring, General O'Meara said: "The combat readiness of the artillery of an armored division can only be established by tests which make greater demands than those now in use on rapid occupation of position and rapid delivery of accurate fire in support of moving situations."

When he forwarded the test to the Commanding General, Seventh Army, Lieutenant General John F. Uncles, VII Corps commander, wrote: "The concept outlined in proposed test is considered excellent . . . not only for armored artillery units, but for all cannon-type battalions. The proposed test more nearly simulates artillery situations in the early phases of combat than the present test, and is a distinct improvement over the present test."

Seventh Army echoed the sentiment of subordinate commanders. "[The] artillery battalion training test proposed by General O'Meara has been studied at this headquarters and the concept is considered excellent," replied Brigadier General Harold K. Johnson, Seventh Army's Chief of Staff, in directing that the 4th Armored Division administer its test to its battalions during the 1958 season. Seventh Army also directed that VII Corps convene a board of officers, to include representatives of V Corps Artillery and the 3d Armored Division, to determine suitability of the test for armored artillery battalions, and its application to all other cannon-type battalions.

Whatever modifications may be made in the test before the 1959 testing season in USAREUR, it seems evident that General Ryan and General O'Meara have made a valuable contribution to artillery battalion testing, and to the resurgence of the spirit of armored artillery.



The Soldier's Lawyer

**Lieutenant Colonel William T. Keogh
and Captain John T. Jones**

The Legal Assistance Officer is the soldier's "family" attorney authorized by law to give servicemen legal advice and assistance, right up to the courthouse door

SIR, it looks like I'm going to jail," the young soldier announced to the post judge advocate. A man wearing a policeman's badge had waited for him just outside his battery area, showed him a rubber check for \$30 the soldier had signed, and informed him that unless he ponied up before 0900 next morning, he'd go to jail "for a long, long time." The story behind all this, painfully extracted from the 18-year-old, was one that unfortunately is repeated too frequently.

It seems that at about 0200 on the previous Sunday, in the convivial company of several "veterans" and "friends of the serviceman" at a local tavern, and after more beer than he had ever tried to take on in his life, he had run out of money. By this time he was surrounded by congenial companions—among them a waitress, some other soldiers,

and a solicitous bartender. He just couldn't let the session end without buying these wonderful people just one more. Alas! his pocketbook wasn't equal to his generosity. He was broke. His close pal, the bartender, came to the rescue. Out of a feeling of great comradeship he would be happy to lend the soldier \$20, to which a small "service" charge of \$10 would be tacked. The loan was to be paid next day—which happened to be payday.

The bartender gave the soldier the twenty, reached for a cigar box under the counter, brought out a blank check, and suggested that the soldier sign it "just as a receipt." After showing him similar checks in the box, the bartender helped the soldier (who had no bank account) write the check for \$30. Now heavy in the pocket, our hero closed the place in grand style. Next morning, when the rosy alcoholic haze had faded into a headache, the young man assumed that his new friend wouldn't mind if he postponed repayment for a few days. He also began to suspect that \$10 was a lot of interest. Monday passed.

The collector who showed up on Tuesday was an off-duty policeman from a nearby small town. His badge and armament had a certain disquieting effect on debtors. The threat of incarceration sent this soldier in search of help.

He got it from the JA, who patiently explained that his transactions involved several possible infractions of state and military law. He described the purposes and functions of a check and the dangers of their misuse. The language of the state statute and of the *Manual for Courts-Martial* regarding the issuance of worthless checks impressed the soldier. Fast action was necessary to prevent criminal pro-

Lieutenant Colonel William T. Keogh, JAGC, was commissioned in the Coast Artillery Corps in 1941. He has served in the Patents Division of OTJAG, was Chief of International Law at USAREUR Headquarters, and will soon be Circuit Judicial Officer for the Ninth Judicial Circuit. **Captain John T. Jones**, JAGC, was commissioned in the Infantry from West Point in 1946. Legal assignments include duty in the JA Section at Third Army Headquarters and as instructor in the Department of Law, USMA. Both officers are 1952 graduates of the Army's Law School Training Program, and they comprise the Civil Law Section in the office of the Staff Judge Advocate, USA Air Defense Center at Fort Bliss, Texas.



To help smother brush-fire wars, the U. S. Army's new STRAC forces practice vertical envelopment in

U. S. ARMY PHOTO

exercise **WHITE CLOUD**

Training is rugged, realistic for the U. S. Army's STRAC—Strategic Army Corps. The recent Exercise WHITE CLOUD involved two weeks of intensive maneuvering which exemplified the mission for which STRAC was organized:

immediate response to cope with limited war anywhere in the world.

The famed 101st Airborne Division played a typical STRAC role in WHITE CLOUD, utilizing the technique of vertical envelopment to establish strategic islands or airheads deep within "enemy" territory.

Launching action from Fort Campbell, Kentucky, the 101st climaxed the Exercise by para-drop and air landing of some 5,000 troops and equipment on unfamiliar terrain in "besieged" territory at Fort Bragg, North Carolina.

This public information message also appears in the current issue of HARPER'S Magazine.

Here, they maneuvered against "aggressor" forces drawn from STRAC's 82nd Airborne Division under conditions simulating atomic, radiological and electronic warfare.

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ceedings against a young man who never intended any offense. Telephoned arrangements with a local bar group (the legal bar, that is), the police authorities, and the Armed Forces Disciplinary Control Board, retrieved the check. The debt was paid at a lawful rate of interest, and a worried soldier sported the knowing smile of the wiser, but poorer, man.

Health insurance on a car

This judge advocate soon knew this was his day for cases involving financial difficulties. Another troubled young man related that he "owed" several hundred dollars and didn't have the money to pay. It seemed that he, too, had fallen into the tender hands of "friends of the serviceman." His particular patron, Easy Ed, a used-car salesman, offered a shiny but ancient job for \$650. The soldier had, during his overseas tour, saved \$300. His affable acquaintance assured him there would be no trouble about the deal; he knew someone who could arrange things.

After getting the customer's \$300 cash, Easy Ed took him to the offices of Friendly Jack, the moneyman. Here the financing was quickly and efficiently arranged. The charges? Loan, \$350; physical-damage insurance for one year, \$145.20 (of course, this covered only damage to the car, and reimbursed only the lender); service charge, \$8.65; interest charge, \$32.16; license-tag fee, \$17.28; health and accident policy, \$72.76 (this paid \$90 per month to the lender if the insured became hospitalized, the balance due on the car if he died). Total, \$626.05. Repayment of this sum, for which a note was given, was to be made over a 12-month period.

After the soldier had paid two months' instalments, he was forced to default (not surprisingly, on a private's pay!) He returned the car (without getting a receipt or release, or making any kind of agreement, of course). In a few days, he was informed by Friendly Jack that he still owed a "deficiency" of several hundred dollars because the car when resold did not bring the balance due (about \$550).

Intrigued by the heavy insurance coverage, the JA asked his client why he needed health and accident insurance, since his pay continued during times of illness.

"Oh, the state law says you gotta have it."

"Any other insurance?"

"Yes, I had to buy public liability insurance in order to operate the car on the post. That's what really broke me."

Investigation through the channels we already mentioned, plus a call to the Better Business Bureau, revealed that it was Friendly Jack's practice to sell *all* soldiers his health and accident policy. The soldier's mention of state laws stemmed from a device used by the loan agent in order to get a fast signature on the note and mortgage. On the wall behind his desk hung a placard advertising his particular brand of insurance. The small print across the bottom certified that the company's rates were "approved" by the state. To the soldier, so anxious to acquire that shiny wreck, that could easily have been made out a requirement by the state that such insurance must be tied into financing the purchase of a car.

Of course, the agent for all policies was none other than Friendly Jack. In this instance the cooperating agencies and the JA succeeded in having the demand for a deficiency payment withdrawn, and the practice of overinsuring curtailed. This soldier, we don't doubt, is now a barracks expert on credit transactions.



For the JA the day didn't end with the car problem. Into his office walked another soldier carrying an armful of papers. He delivered himself as follows:

"Suh, Ah heah yawl make out income-tax retuhns. Ah just come in the Ahmy and had m'own fahm until Ah got drafted. This heah is all mah bills and receipts f'the last yeah. Be obliged f'you to look 'em ovah and tote up m'fohm."

With that he dumped at least three hundred various forms on the desk and started out the door. After some minutes he was convinced that he overestimated the services available to him; bookkeeping is not one of them.

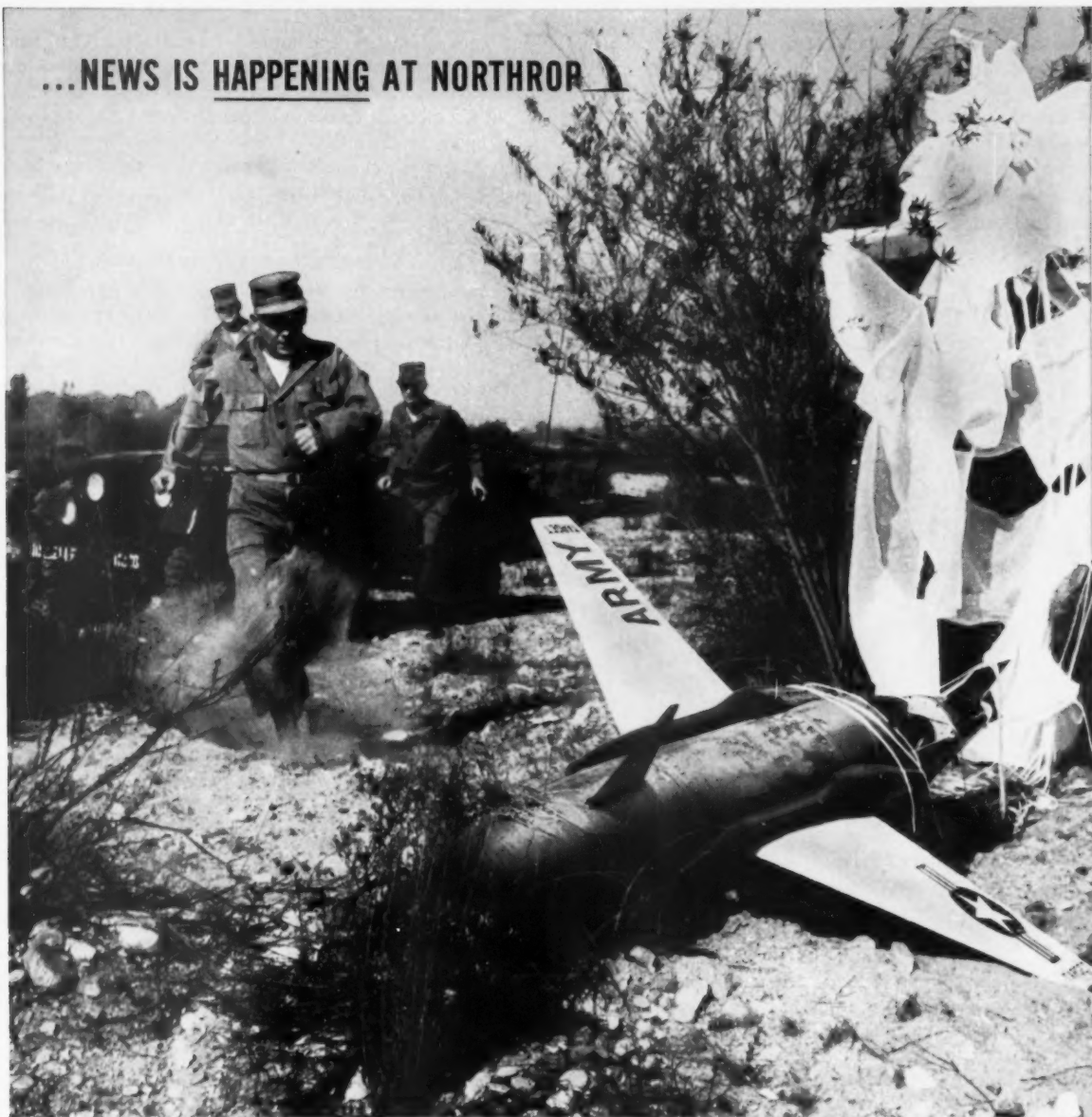
A variety of legal problems

The events we have related are normal to one agency at a typical Army post, whose constant popularity rivals sick call after a week's bivouac in the rain. This is the office of the judge advocate, who concerns himself with a limitless variety of challenging, interesting—sometimes amusing, sometimes delicate—but always important legal problems.

Any day would pose problems like these:

- Adoption of a foreign child of a serviceman's wife, the child being in the foreign country, the soldier and his wife presently in the United States.
- Explaining the meaning of that bundle of papers necessary in the purchase of a home under the FHA-GI plan.
- Preparing wills or powers-of-attorney for service folk headed overseas.
- Disappointing a young soldier by telling him that he is too young to marry without his parents' consent.
- Dispelling the myth that simply wearing a uniform relieves a person of the obligation to give notice of terminating a lease.
- Helping to prepare a delinquent income-tax return, or explaining a deficiency notice from the Internal Revenue Service.
- Interpreting an insurance policy.
- Advising on benefits derived from Social Security payments.
- Determining the route to citizenship for an alien bride.

...NEWS IS HAPPENING AT NORTHROP



RADIOPLANE RP-76 SIMULATES NEAR-SONIC ENEMY ...ARMY MISSILEMEN SCORE HIT IN FIRST FIRING!

Place: Red Canyon Range, New Mexico. Time: minutes after an RP-76 high-altitude air-launching by Radioplane personnel. Event: Army missilemen sight RP-76 simulating an enemy weapon system approaching at Mach 0.9. They fire—for the first time against an RP-76—score a direct hit.

Responsible: the men of Battery C, 1st Missile Battalion (Nike-Ajax), 56th Artillery, U.S. Army Defense Command; the men of Radioplane's contractor-operated flight service program, backed by the more than 2,500 Radioplane drone specialists who designed and produced the RP-76.

This Army-Radioplane achievement typifies the result of Radioplane teamwork with all of the U.S. Armed Forces. Other current examples in development: the supersonic USAF-XQ-4A weapon evaluation target drone and the U.S. Navy's XKD4R-1 rocket target, two more members of Radioplane's complete drone family.



RADIOPLANE

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- Steering a hopeful inventor on the path to a patent.
- Describing the legal implications of an automobile accident.
- Examining a questionable discharge certificate.
- Consulting on a variety of domestic difficulties.

The availability of such counsel is not the least of the fringe benefits offered the 1958 soldier. These services have the happy distinction of being uncurtailed by statutory action or by the lobby efforts of any civilian group. On the



contrary, the legal profession at large is generous in support and encouragement of these services to the soldier.

The Legal Assistance Officer

This legal service is authorized by AR 600-103, which establishes the position of Legal Assistance Officer. In brief, the LAO is a qualified attorney, usually a member of the Judge Advocate General's Corps, who operates a general practitioner's office under the supervision of the command's staff JA. He may be consulted by anyone entitled to his services, on any matter except one involving punitive action, which is a function of a defense counsel. In practice, it is rarely possible for one LAO to perform the entire task required of him by the regulations. That can be understood when one considers that some posts, including the dependents locally connected, may provide this gentleman with upward of 50,000 clients. Therefore, all other judge advocates assigned to that staff section usually assist him in the swift completion of his rounds. But in fairness it must be said that the supply of judge advocates is not always equal to the demands of the clients. Some clients may even challenge the claim of speedy results.

What's it like to "go see my lawyer" in the Army? Except for the fact that not all civilian practitioners are available at reveille (or around the clock) there isn't much difference from visiting the friendly neighbor who has been the family's attorney for years. All consultations are subject to the lawyer's code of ethics. Anything communicated to an attorney is held by him strictly confidential. Often we discover that a soldier has delayed his visit because he fears his business is "official" and must be reported

to higher authority. His mind is quickly set at ease. Some clients are surprised to learn that the rules applied to their problems are the same as those used in identical cases encountered by the civilian practitioner. Some, of course, are disappointed at the lack of "special" laws that will permit service people to have preference over their opponents. Usually, though, only a few remarks are required to launch a smooth interview.

As far as the courthouse door

How complete is this service? You may have heard it said that the legal services offered to service people under this program are best described as "representing the client as far as the courthouse door." Such a charge no doubt recognizes that AR 27-5 prohibits an attorney, while in the Army, from appearing for his client in a civil court without special authority.

True, this service does stop somewhat short of the courthouse door. When a case is obviously headed for a civil court or requires other proceedings involving an opponent, an early consultation with a member of the civilian bar is advised. Before he goes into such a consultation, however, the soldier would probably be advised of the chances, both in his favor and against him, and the part, if any, his insurance company should take in the proceedings as well as the advisability of consulting a civilian attorney.

Close liaison with the local bar association is maintained. If he is asked to do so, the legal assistance officer requests the local Lawyers Referral Service to find an attorney who will accept the case. Not infrequently judge advocates are asked if the Army can grant a divorce, or if a court-martial can award a civil judgment. While such attribution of power must be modestly denied, the inquiry is considered by some JAs to be a compliment, as a result of past expert service.

Problems that can be handled without resort to civil action are disposed of without reference to a local lawyer or to command channels. For example, arranging a compromise in the case of an indebtedness by helping the debtor offer a reasonable proposition to the creditor; or, in appropriate cases, preparing a letter for the client to sign. Marital relations cases may be sent to a chaplain or to proper medical consultants, or may be referred to the Family Service Association, an agency which exists in many communities for consultation in domestic matters. Very often an impending family breakup will be averted. It is probably true that when civil action is resorted to, a local attorney would more likely be engaged than would be the case if this preliminary advice by the JA were not available.

Most judge advocates find that many persons have exaggerated notions regarding fees charged by civilian attorneys. Many simply assume that *any* fee is outrageous. After answering their questions concerning costs, and describing the complicated and tedious work that lawyers must do, the civilian practitioner usually is consulted with confidence and with no fear of exorbitant charges. Many persons endure oppressive and unlawful debts, yet abandon their rights to just compensation, simply through ignorance of those rights and an erroneous can't-afford-it attitude toward lawyers. However, after a discussion with the legal assistance officer, often the choice of seeking relief through some type of action is a well-informed, beneficial decision.



Understanding

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Legal "preventive maintenance"

Probably the most important crusade carried on by the soldier's attorney is in legal education, or "preventive maintenance" advice. Most of this is done through personal contact, although he is available for troop information sessions and other lectures. On such occasions he can advise groups of soldiers concerning the legal pitfalls that beset the uninformed and which particularly attract soldiers.

To a degree, when a person becomes a soldier his former private business becomes a matter of public concern. Indirectly, he may be punished for a debt, if his refusal to pay is deemed to reflect discredit upon the service (Article 134, UCMJ). Although his pay cannot be garnisheed, the possibility of disciplinary action worries even the most innocent. Letters from persons and firms experiencing financial difficulties with a soldier are, by regulation, a proper concern of his commanding officer. An intelligent answer requires an embarrassing interview with the soldier. You cannot expect a busy officer, whose main job is to train his battery or company, to be delighted at the prospect of having to answer dunning letters. But such is the lot of many a unit commander, and the LAO is his best ally in reducing the frequency of such unpleasantness.

Servicemen can become embroiled in monetary difficulties based on a variety of dealings, from dancing lessons to unneeded pink limousines. Failure to understand the obligations they undertake appears to be the starting place of regret and trouble. As in the case of our hapless friend with whom we began, not infrequently a soldier is asked to sign a check only as a "receipt" when he prepares to, or does, purchase on the installment plan or when he borrows money (too often in that gin mill). Young soldiers, especially, are ignorant of the fact that signing a check on a bank in which they have no funds can be a crime under both military law and the statutes of most states. When the "buddy" who permitted, or in some cases persuaded, him to sign the instrument as a "receipt" charges him with larceny or a related crime, a series of actions resulting in consequences serious to the soldier may be triggered. The news that an automobile, or a refrigerator, or a TV set, or an encyclopedia, or a piece of furniture may not be removed without the mortgagee's consent from the county in which the mortgage is recorded, often sadly disillusion a soldier's bride when he is ordered overseas. The soldier is astounded to learn from the transportation officer that the Army will not transport mortgaged property without the consent of the mortgagee. "Refinancing" through a new, more liberal mortgagee can compound the financial woes of a family already budgeted to the point of discomfort.

On occasion, a sharp real-estate salesman talks a soldier and his wife into signing an "earnest money" contract to purchase. That "earnest money" contract can bring deep gloom if the soldier or his wife has a change of mind about the dream house, and is advised that only a court can determine how much, if any, of the deposit he can recover. Removed from parents and the familiar surroundings of his home town, the recruit who enters the Army shortly after graduation from high school finds that the fast processes of today's "easy payments" world can enmesh him in troubles which will not only make him personally unhappy, but seriously affect his performance of duty. In the absence of the experience and judgment of more mature friends, or the counsel of parents and other relatives who would probably have advised against purchasing that encyclopedia

or signing that contract with the health salon that will make him glamorous, he enters into some astounding "deals."

As a substitute for absent counsellors, the legal assistance officer is most effective. Any one of this variety of legal problems may be relatively minor, requiring only a few minutes' advice, or the preparation and dispatch of a letter, or reference to some helpful agency. In the serviceman's eyes, his problem is the world's greatest. If he is unaware that legal advice is available, or is prevented from seeking it by a wary first sergeant or unit commander, he may step into a serious error. Or, if he *thinks* he has erred, the seeds of uncertainty may grow into discontent and the ultimate result may be a short but sad military career. Many infractions such as AWOL might have been averted if, at the proper time, the soldier had been permitted—or more important, encouraged—to seek legal advice. In too many instances it is only a short step from a good soldier brooding over some legal difficulty to a bitter one who becomes a disciplinary problem, with resulting loss to both the Army and himself. Often the soldier needs only to get the thing off his chest, but daily contact with his officers and non-commissioned officers in matters concerning his trade is not conducive to placing him at ease so that his problem can be talked out. Besides, his officers and noncommissioned officers do not always have the time to hear his troubles.

Encourage the soldier to seek advice

Since law is the most attractive of all professions for amateurs to practice, a willing buddy may furnish his harried friend the worst advice imaginable. Unfortunately, too many people are, through such inexpert counsellors, advised to "let the finance company take the refrigerator" or "forget that bill." The commander must make all his men aware of the functions and capabilities of the LAO, and the fact that he can offer competent, stabilizing advice.

Commanders must be alert to insure that their men are never denied such advice or discouraged from seeking it. True, there will be instances when a soldier suddenly needs an excess of assistance—usually this is just when a somewhat onerous task is scheduled. This man will come up with an extraordinary number of legal problems that necessitate a great deal of time with his lawyer. Dealing with this bird requires only common sense. The right words in the LAO's ear, and you'll get his cooperation in arranging for after-hours consultations.

The ideal legal assistance program is one in which all clients have their wills and powers-of-attorney prepared, their contracts examined, deeds read, payment schedules explained, and tax returns reviewed *before* trouble develops. In short, no after-death-the-doctor calls. Achievement of such a happy state is probably impossible, human beings being what they are, but even a near miss would be a great help to the commander. Company and battery commanders would do well if from time to time they would remind their men that a lawyer's advice—and for free, from a judge advocate of the command—should be sought *before* that all-important signature is placed on any "legal" paper or *before* that certain "situation" arises. The soldier who seeks such timely legal advice is the one not likely to become a disciplinary problem or to engender repeated inquiries from automobile dealers, landlords, finance companies, time-payment houses, and many others. Encourage the soldier not to wait until he *needs* a lawyer. Tell him he *has* one.



Photo of an official flight test of AN/USD-2 drone, U. S. Army Test Station, Yuma, Arizona.

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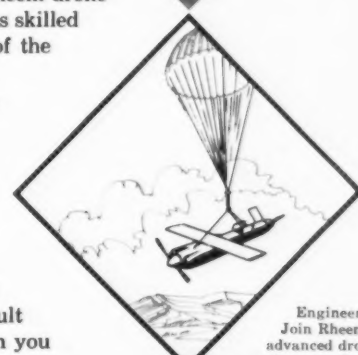
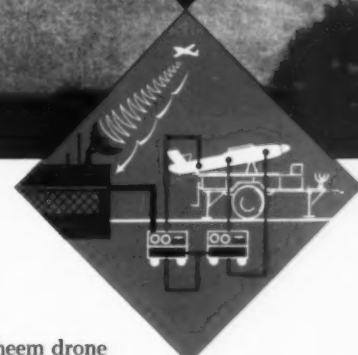
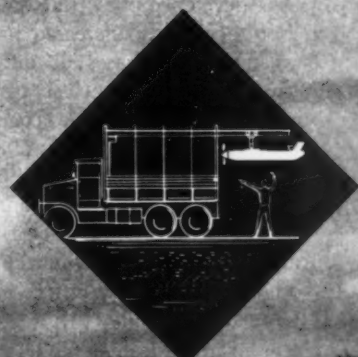
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TARGET ANALYSIS WITH THE ADT

COLONEL THEODORE C. MATAXIS

TO develop our tactical doctrine around the concept of the greatly increased firepower of tactical atomic weapons, all phases of our combat training should simulate use of nuclear weapons. But to use these weapons properly, the commander must know the casualty-producing effects of various yields on the enemy's forces, and the risks he imposes on his own troops.

Two methods of target analysis are now being used to plot the effects of a nuclear burst on the enemy while at the same time assuring the safety of our own troops. These are the numerical system and the atomic damage template (ADT) method.

The numerical method is used by specially trained target analysts. It assesses the numbers of casualties, or fixes the percentage (fraction) of the target which may be damaged. This method is used at most higher headquarters. While it has its merits and uses, the numerical scheme is slow and rather complicated, and requires the use of many charts, books, a slide rule, and graphs.

The atomic damage template system is much simpler. It reduces the basic data obtained from the graphs and books of the numerical system to a few lines on an acetate template. More important, the fact that these data are now unclassified greatly increases the availability and usefulness of the ADT in all phases of training. This removes the overclassification and overcomplication which in the past denied details of the effect of nuclear weapons to commanders and staff officers who were to use them in support of their units. Different templates, scaled to fit different maps, can be constructed for the radii of effects of each weapon's yield. Besides, safety factors for friendly troops are simply and graphically illustrated. These ready references can be rapidly applied to any combat situation that may call for a swift nuclear strike.

Colonel Theodore C. Mataxis, Infantry, after a tour on the staff of the Army's Infantry School, is in Europe with the 8th Infantry Division. This article is adapted from a chapter in *Nuclear Tactics, Weapons, and Firepower in the Pentomic Division, Battle Group, and Company*, by Colonel Mataxis and Lt. Col. S. L. Goldberg, recently published by the Military Service Publishing Company (\$4.25).

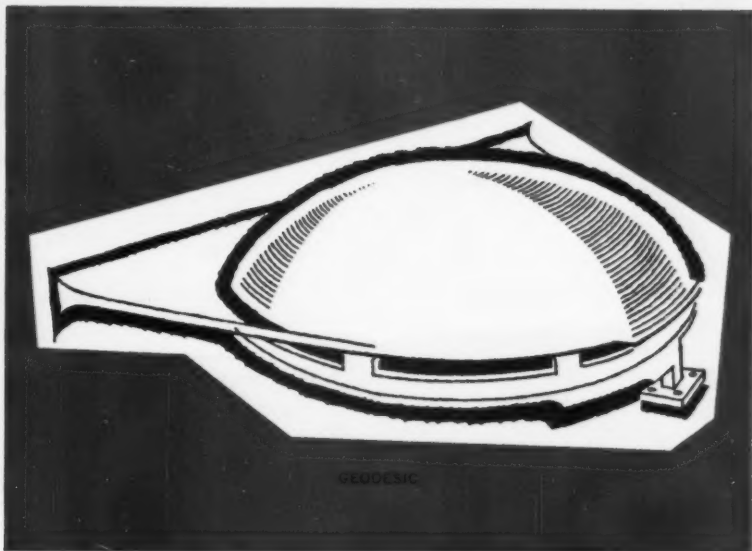
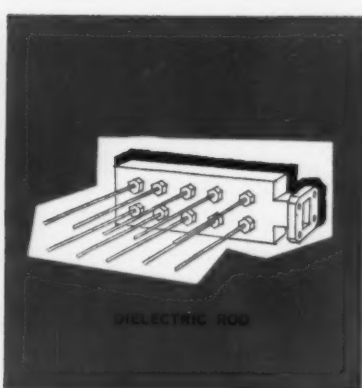
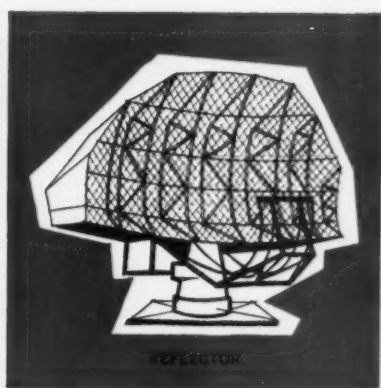
The ADT in action

When the use of a nuclear strike becomes imperative, the first step in applying the ADT is to select the general target area and properly plot it on the map. Then we use the correct size of template to select the optimum-yield weapon to fit our need. To select the weapon of proper yield, and to locate ground zero (GZ), templates are placed in turn on the map over the tentative target. Templates are shifted back and forth until the appropriate one turns up. During this process of selection, the need for troop safety must be carefully weighed against the results desired from the weapon we will use. Assuming the commander has some knowledge of target analysis, ADT enables him to visualize rapidly the effects on the enemy of the weapon he selects. It is surprisingly accurate and shows quickly and graphically which weapon is best to use against an enemy target, consistent with troop safety. ADT is especially useful to front-line commanders whose targets are fleeting at best and who don't have time to unlimber a slide rule and ponder the imponderables.

Once a target has been selected, and desired GZ and yield of weapon determined, these data go to the next higher headquarters. Here they are rapidly double-checked by the fire support coordination center. If time allows, they may even be checked against the more accurate but time-consuming numerical method in order to further refine the data. Of course, this can't be done if the time required for detailed calculations would permit the enemy to redispense his forces. Once a suitable target is discovered, speedy reaction is vital.

A major advantage of the ADT system is that it allows small units to rapidly evaluate potential nuclear targets. With the numerical system, data would have to go through channels from company or battery to battalion, and on to regiment. From there it would go to division headquarters for evaluation. The basic data of the ADT, plus a recommendation for the yield of weapon to be used, can be forwarded quickly. This cuts the delivery time-lag considerably, a point well noted during past exercises, in contrast to the numerical system.

A set of templates for use by company or battery, and



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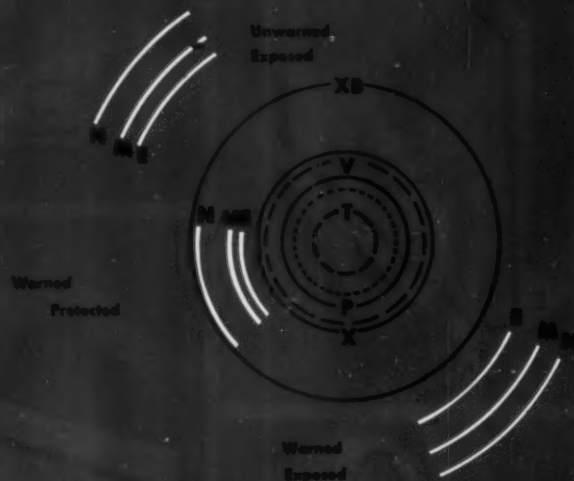
FIGURE 1. ATOMIC DAMAGE TEMPLATE

LEGEND

- Material damage
- Area of induced radiation
- Personnel casualties

TROOP SAFETY AREAS

- S Emergency Risk
- M Moderate Risk
- N Negligible Risk



Note: Delivery error not included in radii

all other units up to army group, can readily be constructed on acetate.

Figure 1 shows the template for a Charlie weapon (20 kilotons), low air burst. It is used with a map whose scale is 1:50,000. In the center is a cross marking ground zero. The dotted circle indicates the area of induced radiation. The two dashed circles indicate the area within which tanks and other vehicles will be damaged. The three solid circles inclose the area where casualties will occur. Three series of safety arcs indicate degrees of risk to friendly troops under varying conditions of personal protection.

GZ is the reference point

Now let's describe each symbol in detail. The cross in the center, marking ground zero, is the reference point for all other data. It represents the actual, not the planned or desired, GZ. This is important because, depending on the circular error probable (CEP) of the delivery system we will use, frequently the point of detonation is some distance from the desired aiming point. On the ADT, however, the cross represents the actual center of detonation in order to establish a refer-

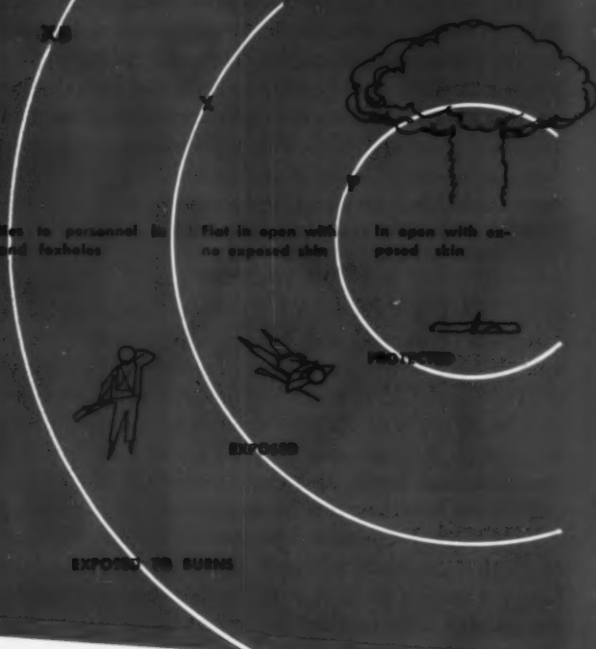
ence point for determining various damage and safety factors.

The area within the dotted circle indicates the extent of neutron-induced gamma radiation. This area is localized and exists only near GZ where the neutrons released by the burst have induced radioactivity in the ground itself. This dotted circle incloses the area of significant gamma radiation which is dangerous to man. It can be crossed by troops moving rapidly, but the risks are such that a unit moving into it must have RADIAC instruments in the hands of trained users to insure that the degree of radiation absorbed by the troops is closely monitored. The degree of radiation to which men will be exposed depends upon the period they remain in the area, whether they are on foot or shielded in armored carriers or tanks, and on the time elapsed since the burst. When exploiting the breakthrough of a heavily defended enemy position, or during a counterattack supported by nuclear weapons, a commander may have to send his troops over this area of induced radiation. Under such conditions, the risks of exposing friendly troops to the hazards of high total doses of radiation must be carefully calculated and

FIGURE 2. EQUIPMENT DAMAGE CIRCLES



FIGURE 3. PERSONNEL CASUALTY CIRCLES



weighed against any advantages gained by speed and surprise. Only the outer edges of areas of induced neutron activity can be safely crossed by foot troops. The dotted circle indicates the distance from GZ at which radiation will commence to concern the commander. However, he must ever bear in mind that foot troops cannot remain even in these outer areas for any appreciable period.

Damage to vehicles, weapons and areas

In Figure 2 the dashed circles T (tanks) and V (vehicles) indicate the extent of blast damage to equipment of tactical units. Degrees of damage to equipment are classed as light, moderate and heavy. Because light damage does not preclude the reuse of equipment without repairs, it is not usually considered except when calculating troop-safety factors. Moderate damage, which precludes their reuse until after extensive repairs, is the most important degree when using nuclear weapons. For certain types of targets, however, the classification of severe damage will be mandatory.

These dashed circles show the distance from GZ where the potentiality of damage to equipment is at

least 50 per cent. For our purposes, we will assume that within these circles damage to equipment will be heavy, and that there will be some, though not very extensive, damage outside them. For all practical purposes, the damage outside the circles can be ignored, and considered only a bonus. For example, at a distance of only one and a half times the radius of the circle, the ratio of damage falls rapidly to less than one per cent.

The T circle incloses the area of moderate damage to heavy equipment, including not only tanks, but artillery pieces, armored vehicles, and infantry heavy weapons such as mortars, machine guns, and recoilless rifles. The damage we cause will effectively prevent their reuse until after extensive repairs.

The V circle incloses the area of moderate damage to trucks, cars, prime movers, and other unarmored vehicles. The damage by direct blast and secondary bursts will prevent their reuse until after extensive repairs.

In addition to damage to military equipment caused by blast, a nuclear strike also creates an area of extensive demolition within built-up areas and forests. Our planning must consider such an area when it falls astride a route which will be used by an attacking force.

The damage within this area will be in the form of blown-down trees and buildings that will block the routes of an exploiting force. An attack could be further complicated by extensive burning in the blasted area. This "obstacle line" lies within 50 yards of the emergency-warned protected arc on the atomic damage template. It is not shown on the atomic damage template in order to use a minimum of circles. However, when such a circle is needed, it may easily be indicated by a dashed circle marked O running through the emergency-warned protected arc on the ADT. When planning to use atomic fires on a heavily built-up or forested area, where the blast could block an attacking force's routes of exploitation, this obstacle line should be added on the ADT.

Effects on troops

In Figure 3 the circles P (protected personnel), X (exposed personnel) and XB (exposed to burns) indicate the area of troop casualties. These circles show the distance from GZ at which the probability of casualties will be 50 per cent. As with equipment damage, it will be enough to remember that within the circle some casualties will occur, and that outside the circle they will be so few they can be considered only a bonus.

The circle P (protected personnel) incloses the area of greatest casualties to dug-in troops occupying an infantry defensive position with bunkers, an artillery firing battery with bunkers for crews, a protected and dug-in command post, or a protected and dug-in administrative or supply headquarters. It also includes crews of tanks and armored vehicles who would become casualties from radiation within this area. Within this circle casualty effects will be immediate, and their severity felt within at least one hour after detonation. Depending upon the type of target, the effects of blast and radiation are greatest within this area.

The X (exposed personnel) circle outlines the area of casualties among troops in the open. However, we must assume that these troops will have been properly indoctrinated and trained, and will expose little or none of their bodies to thermal radiation. As with protected troops, we assume these casualties will be either immediate or will occur within one hour after the burst. In both instances, additional casualties will occur later among the exposed troops. However, the time when radiation sickness becomes apparent is so unpredictable that any casualties occurring after one hour of the burst must be considered a bonus, and not as a factor when using tactical nuclear warheads. Here radiation effects combine with secondary blast effects to produce a substantial number of casualties within the X circle.

The XB (exposed to burns) circle incloses the area of potential casualties from thermal effects on exposed flesh. It is included only as a yardstick for bonus casualties from thermal effects. This is a recent change. Initially, casualty effects from atomic blasts were calculated to maximize the XB circle against troops in the open. Recent studies indicate that properly trained and indoctrinated troops can protect themselves at this dis-

tance from burns on exposed flesh. However, a surprise attack could well produce substantial casualties within this area, especially on disorganized or ill-disciplined troops in rear assembly areas or at supply points. The distance the XB circle extends is also a constant warning of the necessity to insure that troops are always alert against a nuclear attack.

Risks to our troops

The degree of risk to our troops has also been simplified considerably, and is shown on the ADT by a series of troop-safety arcs. These arcs indicate the risks to friendly troops under three different degrees of vulnerability to casualty effects from an atomic blast. Data on the ADT indicate the two factors that must be stressed when calculating troop safety. First is the actual distance of the troops from GZ. Even a cursory examination clearly shows that the greater the distance from ground zero, the less the danger to our troops. The second factor is the degree of protection from the effects of an atomic strike at the time of detonation. Let us look at these more closely. (Figure 1.)

First, the safety areas which are used to determine the risk to friendly troops. There are three different degrees of risk: N (negligible), M (moderate), and E (emergency). The commander must select the degree of risk he will accept. This varies each time the weapon is used, and depends on the tactical situation, availability of weapons and delivery systems, and sense of urgency at the time. Here are some guides the commander can use when selecting the risk he will accept.

NEGLIGIBLE RISK ARC. At this distance from detonation our troops are safe. The effects suffered at this distance will be negligible, and for all practical purposes can be ignored. This is the type of risk normally acceptable.

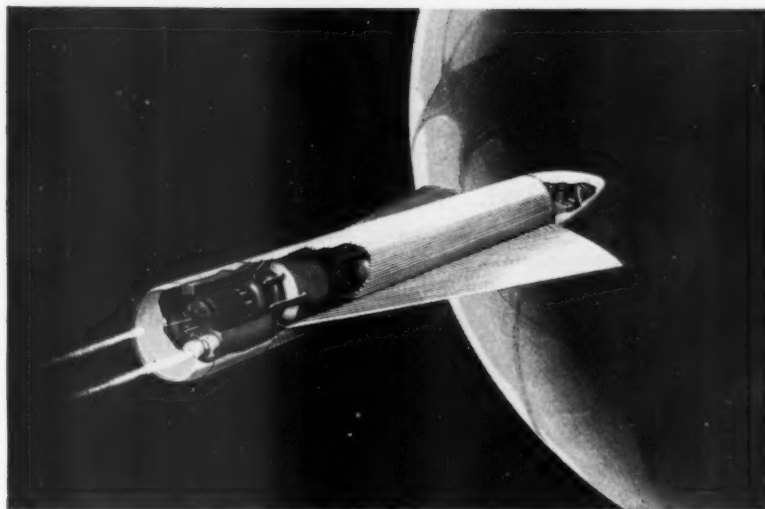
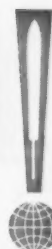
MODERATE RISK ARC. This is the distance from the blast at which the effects are acceptable or at the worst a minor nuisance. The degree of risk is moderate enough so that its habitual acceptance should not affect morale among our forward units.

EMERGENCY RISK ARC. This risk will be taken only when prevention of disaster to our troops from enemy action demands it. At this distance from GZ, friendly troops will suffer some temporary shock, and take a low percentage of temporary casualties. There will probably be no deaths, but combat efficiency will be impaired. Units this close to the detonation will probably suffer a significant temporary loss of combat efficiency and may be partially ineffective for a few days. Depending on indoctrination and training, they should be ready to return to action at or near full efficiency in a few days, unless prevented by an accumulated radiation dosage.

We have examined the influence of distance from GZ on degree of risk to friendly troops. Now let us consider the effects of the degrees of protection available to troops.

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sible extended reconnaissance of the Solar System and detailed studies of the phenomena of Space.

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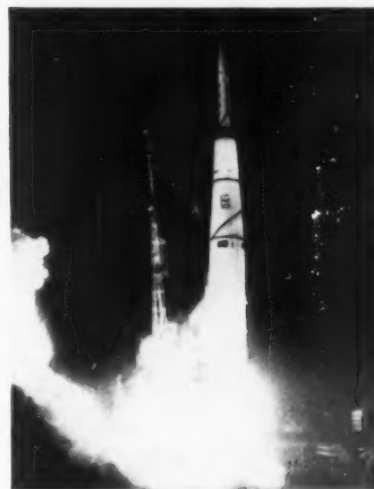
Testing in Space conditions

Rocketdyne has been at work on ion rocket engines since 1955. While many difficult design problems yet need to

be solved, extensive new facilities and three years of exhaustive studies are being applied to the job. Rocketdyne scientists will operate their experimental ion engine in simulated space conditions to unlock important answers to thrust chamber design, power conversion systems, nuclear heat sources, and propellants.

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Effects of degree of protection

Because of the additional protection it affords, a soldier in a bunker or in a tank can be much closer to GZ than one in a shallow slit trench. Degree of protection is closely associated with specific degree of risk to a soldier at varying distances from the blast. For this reason, the safety arcs on the template are divided into three degrees of protection, shown in *Figure 1*.

UNWARNED EXPOSED. Under these conditions, we assume the soldier is standing in the open when the burst occurs. Immediately he drops to the prone position, before the shock wave arrives. We also assume he is wearing normal combat clothing which does not shield the face and head from direct thermal effects.

WARNED EXPOSED. Here we assume the soldier has been warned that a nuclear weapon will strike near him. He will then have time to drop to the prone position, behind a fold of earth, a clump of bushes or grass, and cover his face and hands so that no flesh will be exposed. We assume, too, thermal protection to be equivalent at least to a two-layer cotton summer uniform.

WARNED PROTECTED. When warned and also pro-

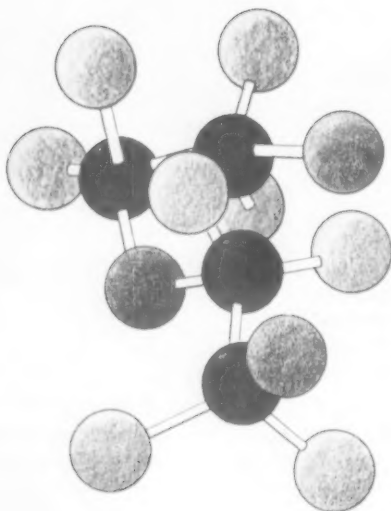
ected, the soldier has the best possible chance of withstanding unharmed a relatively close burst. Note that on the ADT the circle of effects XB (exposed to burns) reaches well to the rear of even the negligible risk safety arc. In these circumstances we assume the soldier is in a foxhole with improvised overhead thermal shielding, or in a tank or armored personnel carrier.

As you can see, while the ADT method does not give as complete a picture of the results of an atomic attack as does the numerical system, its basic information is sufficient to enable a commander to intelligently initiate the preliminary steps in planning for atomic support of his unit. Once we have selected our target, the ADT system will show quickly and graphically what available weapons system is best suited to destroying the enemy while assuring the safety of our troops.

ADT's simplicity has changed the role of the small-unit commander on the atomic battlefield from that of spectator to that of active participant whose nuclear firepower can influence the course of action. With it, he can combine and control firepower and maneuver to accomplish his mission.

The Select Weapon

Meirel K. Salamon



ARTICLES in American periodicals consistently decry the potential use of toxic warfare. They stress its "horrors" and refer to it as a weapon of "mass destruction." These articles illustrate again and again how their authors ape one another. It seems they expend neither time nor energy in investigating toxic warfare and its effects. They associate the terms "toxic warfare" and "horrible death," not realizing that neither chemical warfare nor biological warfare need result in mortality or permanent injury.

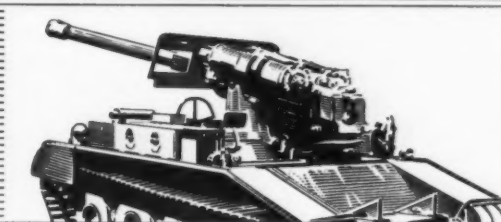
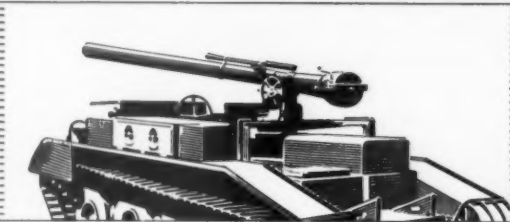
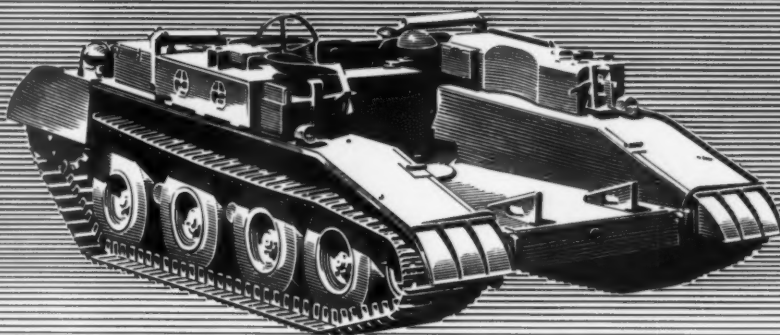
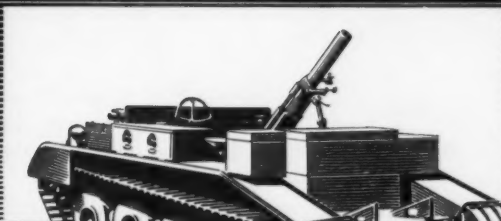
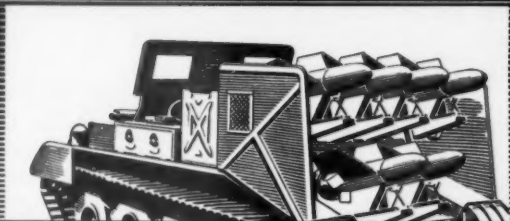
No particular shudders are evoked by the thought of using high explosives. Explosives may blow off a man's limbs or half his face, but these can be replaced by prosthetics and plastic surgery. Of course, they may also kill—slowly and with much suffering, or quickly by blowing a person to bits.

During World War II and Korea the flamethrower was considered a select weapon. This weapon too is

Mrs. Meirel K. Salamon has been employed at the U. S. Army Chemical Center for more than eighteen years. For several years she prepared articles and speeches for a former Chief Chemical Officer, and is perhaps by virtue of her position more fully aware of the ramifications of CBR warfare than most American women.

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Adaptability of thinking and facilities at the Cleveland Ordnance Plant is reflected in the wide range of projects successfully undertaken for the Armed Forces. Adaptability has been achieved, too, in devising new uses for the currently "in-production" M-56 Scorpion. Designed as a 90 MM assault weapon, the M-56 is now ready to serve with equal effectiveness as a recoilless rifle or mortar mount, rocket and missile launcher, or as a personnel or cargo carrier. What's more, the ultra-lightweight aluminum and steel-alloy construction of the M-56 makes all of these adaptations air-transportable and air-droppable, as well as extremely mobile in mud, sand or snow. The adaptability of our engineering, our facilities and the "in-production" M-56 can help solve your ordnance problems, today.



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acceptable, because it merely broils the victim alive. It also permits him a slight chance of recovering after months of suffering. What's more, the victim can probably accustom himself to the scar tissue covering the burned areas.

The survivors of high explosives and flame can make a new life for themselves in spite of their injuries, provided they are not inclined to over-remember.

Are such weapons humane?

One of the most rational objections to the prohibition of war gases came from an American—Captain (later Rear Admiral) Alfred Thayer Mahan. In 1899 Mahan was a U. S. delegate to the First Hague Peace Conference, which considered a proposal to ban the “use of projectiles, the only object of which is the diffusion of asphyxiating or deleterious gases.”

In voting against the proposal, Captain Mahan said in part: “It was illogical, and not demonstrably humane, to be tender about asphyxiating men with gas when all were prepared to admit that it was allowable to blow the bottom out of an ironclad [warship] at midnight, throwing four or five hundred men into the sea, to be choked by water, with scarcely the remotest chance of escape.”

Mahan's reasoning is still logical. Is one means of killing an enemy preferable to another? If so, who should choose the weapon: executioner or victim?

If Mahan were still alive, his thoughts on present-day use of “asphyxiating or deleterious gases” would probably be very interesting. In all probability he would still have a personal interest in the development of toxic warfare. However, like all others not directly concerned with our Chemical Corps' mission, his knowledge would be limited to what he read in unclassified literature and in the free press.

Germans against themselves

The German delegates to the Conference disagreed with Mahan and voted for the proposal outlawing toxic warfare. Yet, just sixteen years later, the Germans by their actions admitted they had erred in voting for the proposal. They found a means of disseminating asphyxiating gases, and they used their new weapon when it became advantageous to do so. The Allies (and the United States as an Associated Power) were compelled, then, to agree with Mahan, and to the use of chemical weapons.

Between the World Wars attempts to outlaw toxic warfare were renewed. The United States refused to become a party to all such agreements. The Soviet Union, however, ratified the Geneva Protocol prohibiting “the use in war of asphyxiating poisonous or other gases, and of bacteriological methods of warfare.” The USSR, however, stipulated that she would not be bound by the terms of the Protocol with respect to any Power which did not ratify, nor with respect to any nation which first used such weapons. (Communist China has recorded her accusations that U. S. forces in Korea resorted to bacteriological warfare.)

Although toxic warfare had no role in World War II, it played an important behind-the-scenes part. Our invasion of the Continent on 6 June 1944 was a difficult undertaking. It might have been made still more difficult had the Nazis used their latest weapon—a nerve gas that could kill in a matter of seconds after being inhaled. The mystery of their failure to use this potent and effective weapon was solved with the capture of certain documents in Berlin. Among these was proof that Hitler would not approve its use because he feared the overwhelming retaliatory capability of the United States.

The Allies captured large stocks of this new chemical agent that we call GB. An ally of ours—the USSR—also captured stocks of GB, along with a plant for producing it and the scientists who directed its development. Since then we have improved the formulas for nerve gases. We must assume the Russians have done so too, and that they are searching for more deadly types.

War without casualties

In the United States, however, we pursue a different course. Our scientists are seeking chemical and biological agents which are *not* lethal! We are trying to develop chemicals and bacteria that will take a soldier out of combat for a few hours or a few days, that will make him susceptible to capture—unharm.

The proponents of toxic warfare visualize the possibility of winning wars, whether full-scale or fringe, by temporarily incapacitating the people who do the fighting. There would be no basket cases or scarred bodies and minds. No need to destroy factories, homes, or railways—or noncombatants. The victor would not have to feed and clothe the vanquished since the defeated nation's economy would not be destroyed. That is the course the United States is exploring.

The defeated nation's economy would remain intact even if a lethal agent were used. However, its population would be annihilated, especially that near industrial areas. We may be wrong in expecting an enemy to devastate our steel plants, for example, with a nuclear bomb. Those plants could be helpful to him. By using the same means required to launch a nuclear blast he could deliver a chemical weapon, removing the people painlessly—but removing them—and retaining the structures. Moreover, chemical weapons are cheaper, and their manufacture does not pose as many problems as does the development of nuclear weapons.

Almost every nation of the world has ratified one or more of the treaties that ban toxic warfare. The United States has not. But my faith in our country makes me believe that the United States will not resort to toxic warfare unless it is first used against her. Furthermore, if we are forced into using chemical warfare, we will probably choose non-lethal agents.

I hope we survive the first assault. But if we don't, I hope that attack will be made with chemical agents. I prefer to go out painlessly, and in one piece.



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THE MONTH'S CEREBRATIONS

RATION-PACKAGE DECORATIONS

COL. JOHN F. FISKE

COLONEL Stedman Chandler's excellent "Too Much Fruit Salad" in the November number prompts me to submit my Crackerjack System for processing combat awards and decorations. Unfortunately, although I agree in principle with Colonel Chandler, I find his attitude that of the perfectionist. Mine is realistic. Specifically, the quota system he deplores is fundamental in my plan. We confront (if I may be permitted a cliché) a condition, not a theory.

The basic difficulty is that the authority who approves the award seldom witnesses the heroic action; nor does the board appointed to screen recommendations. Indeed, to many heroic actions there are no witnesses other than the hero, whose modesty (or lack of credibility) may thus preclude any award. It follows that, in most cases, the award is a tribute less to the gallantry of the recipient than to the literary skill of the writer of the recommendation. (Some recommendations surely deserve a Pulitzer award.)

Of course, it might be desirable (in view of the beneficial side effect on promotion) to have senior commanders witness all heroic actions; but that scarcely appears practicable. Thus, any system of recommendations must carry the seed of injustice. Where "The Charge of the Light Brigade" would surely evoke a unit citation and

a DSC, the same incident, narrated with less than Tennysonian eloquence, might bring in nothing higher than the Bronze Star. Even more serious, in view of our limited manpower, is the clerical work involved. I have no statistics on the number of man-hours devoted during WWII to composing, correcting, typing, proofreading, redrafting, and resubmitting recommendations for awards. They must be astronomical. If you add the fact that part of this work involves rare skills that would be better employed in composing theater communiqués or personal publicity for very senior officers, it at once becomes apparent that the Free World cannot again afford such waste.

The Crackerjack System solves both problems very simply, by packaging all awards to predetermined ratio with the combat ration. For example, if the Bronze Star ratio is four per cent per month, then four out of every 3,000 K (or C, or whatever) rations will include a Bronze Star for the lucky fellow who gets that box. The Silver Star and the DSC will appear at lesser frequencies. The Medal of Honor only once in 3 million tries. It should not strain our modernized supply services too much to ask them to provide Class I supplies with varying valor ratios—none to ZI maneuver areas and increased rates to the most active theaters.

I do not propose that the decoration

itself be packaged with the ration. All we need is a card, pre-addressed to the proper control symbol, on which the recipient enters name, service number, unit, and APO. Possibly some other bit of information might be elicited, such as when—if ever—he last heard a shot fired in anger. When it reaches TAGO each card is coded—by semi-skilled labor—for machine processing. I am sure a machine can be devised that would package the medal itself, with a conventional but plausible citation, paragraph and order number, hometown newspaper release, and directive to a pinner-onner at suitable command level. Any recipient wishing a more personalized citation would be encouraged to submit one of his own composition (this expedient has already been tried).

One further precaution. To promote food conservation and to discourage dirty work in the Class I pipeline, each card must be indorsed by the immediate commanding officer. He also certifies that the recipient had actually consumed the ration with which his card was packaged (including, but not confined to, the dehydrated lemon juice). If any hardy soul will eat two C rations in one day to earn a medal, I think he deserves one.

Colonel John F. Fiske, U. S. Army, retired, was commissioned in the Field Artillery in 1926. He now lives in New Castle, Delaware.

THE HUMAN FACTOR IN DISPERSION

MSGT. FORREST K. KLEINMAN

PUBLICITY about the need for tactical dispersion on the atomic battlefield seems to have spawned a dangerous misconception. It is the idea that distances and intervals between *men*—not just units—should be greatly increased.

With disturbing frequency, this idea

is reflected in speculative military writing lately. Some writers even go so far as to depict future battle as a gigantic battle royal—each soldier a superman, presumably, his own leadership and motivation built in like a helmet radio.

Aside from the practical problems of controlling and coordinating fire and movement, there is a human factor our visionaries have failed to con-

sider. Science has revolutionized firepower and is rapidly improving our means of mobility and communication, but it has yet to change human nature an iota. So it is unrealistic to envision any tactical concept for future warfare without considering what we learned about human conduct under fire during World War II and Korea.



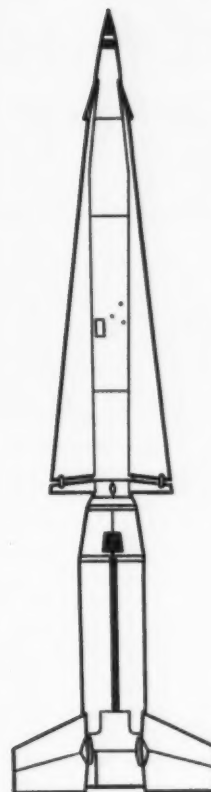
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AR 40-567: THE HAIR THAT NETTLES

MAJOR S. G. MARTIN

AS I look backward, I see a long line of soldiers in olive drab, khaki, blue, and AG 108. Now it's Army Green. Some are short, some are tall, some are fat, others skinny. They carry muskets, Springfield, carbines, M1s. A few have the new M14s. They're of various ages, different branches, and come from all sections of the country. But they have one thing in common: all have hair down their collars. Yes, little bits of hair, like the kind the novelty supply houses use to make itching powder—in their collars, in their ears, stuck like nettles through their undershirts. Maybe tonight they'll get most of it off, if they get to a shower. But it won't come out of the undershirt in less than three trips to the QM laundry.

There are millions of men in this parade. They stretch back past all the old milestones—Okinawa and Omaha Beach, Guadalcanal and Kasserine Pass. Their ranks are formed without regard to seniority. Private Hargrove stands beside General Hodges, and Mauldin near MacArthur. They're comrades in arms and companions in misery. They all got this way because of a little subparagraph in AR 40-567 which sets the soldier apart from his civilian contemporary in a way which no Article of War could ever do.

All it says is: "The use of common brushes, neck dusters, shaving mugs and shaving brushes is prohibited."

It doesn't say, in lieu of the neck duster, what *can* be used. This is left to the discretion of the barber, who in his zeal for sanitation usually uses nothing. Rather, he removes the cloth with a professional flourish, which somehow not only deposits all the

assorted sizes of hair on his victim's neck, but at the same time imperceptibly loosens the unbuttoned collar a little more. This allows the proper measure to fall into the region of the shoulders, the collarbone, and even the small of the back.

For sheer volume, the suffering and anguish caused by this regulation far overshadows those brought on by scourges like the Asiatic flu or the Eighteenth Amendment. It is a crime against humanity no less heinous than those for which so many war criminals went to the gallows after World War II.

As the saying goes, "Anybody can be uncomfortable." But let's not make a career of it. Surely, the society which gave birth to the sewing machine, the steam engine, the filter tip and power steering can devise some sanitary means of whisking away loose hair. We've even seen Army shops where heretical barbers (who were probably later nudged out of the trade) used little vacuum cleaners or compressed-air blowers to do the job.

Let's do something in our own defense, even if it takes a design competition (like the contest for naming the Army Green uniform). The long line of miserable millions, thus succored, will be forever grateful, and the name of their benefactor shall go down in history in the company of those who dealt the death blow to the choke collar and wrap puttees.

Major Stephen G. Martin, Infantry, enlisted in 1942, was commissioned in 1943, and integrated into the Regular Army in 1947. He is on the faculty of the Command and General Staff College at Fort Leavenworth.

The paramount lesson is that men fight best when they are physically close to other members of their unit—however small the unit may be. Men isolated in combat are more inclined to surrender or straggle to the rear than when they are part of a group. Even the isolation of a one-man foxhole makes a soldier more susceptible to psychoneurosis and less willing to fire his weapon than when group-type entrenchments are used.

Recognizing this early in World War II, many units like the 3d Infantry Division adopted the "buddy system," and the two-man or three-man foxhole as standard. The three-man foxhole proved especially effective. One man could sleep while the second was on guard and the third was constantly available for other tasks.

Unfortunately, not all units in the Korean conflict applied the lesson. In an effort to cover a broad frontage on the Kum River Defense Line during July 1950, one battalion deployed its men in individual foxholes about 50 yards apart. The night the enemy attacked, so survivors say, many front-line men thought they were cut off and withdrew from their positions without firing a shot. The results were tragic.

Human research studies of "why men fight" confirm the lessons of practical experience in the matter of dispersion. They show that the strongest factor which motivates the soldier during combat is to earn and keep the respect of his comrades. Obviously this motive is reinforced if the soldier is under the close observation of his immediate teammates.

When the North Korean Army invaded South Korea, its Russian-trained soldiers proved to be experts at infiltration and passive measures of defense against air attack. But rarely did they disperse individually. Even when they intermingled with refugees in the approach march or advanced across country under observed fire, they moved in groups of three or more. Well trained and fanatical though these troops were, their high command recognized the importance of the human factor in deploying them.

Since the nuclear threat makes large-scale infiltration a likely enemy tactic in the future, close combat is no longer the sole province of the infantry. Officers and noncommissioned officers at all installations in the battle area must know how to deploy troops



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realistically for patrolling and close-in defense. Isolating the individual soldier in defense of a rear depot could prove just as disastrous as it did in defense of the Kum River front.

Where to draw the line in tactical dispersion of units on the atomic battlefield is a doctrinal question that I leave to the tacticians. At present

some say the battle group—others say the company-sized force—is as far as we should go in decreasing density in the battle area.

In my opinion, there can be no arbitrary rule. The pattern of unit dispersion in combat will vary widely with the terrain and other variables of the situation. The only constant is

the human factor. If we ignore it and commit individual soldiers to battle instead of teams, dispersion could be self-destructive.

Master Sergeant Forrest K. Kleinman, a frequent contributor, is on duty in the Information Section of CONARC Headquarters at Fort Monroe, Va.

STAY LOOSE

LT. COL. ANTHONY L. WERMUTH

DURING recent years, many thoughtful soldiers have peered into the military future, but few have focused on anything but a hazy image. A few concepts have emerged from the murk, to find fairly wide acceptance among minds thoughtful about military affairs. One danger is that in our eagerness to understand and to formulate useful new concepts, we may enthusiastically apply what seems generally sound predictions to more and more situations. In so doing we may realize too late, perhaps, that we have projected ourselves too far, that the concept does not fit the circumstances that gradually emerge.

One particular major concept that has been widely enunciated and accepted can stand a bit of second-thought with a view toward, if not qualifying it, at least applying it with greater circumspection in the future.

We have been told that never again will any forces operate on the battlefield while deployed in the relatively concentrated patterns of the pre-atomic era. We are told that from here on out, all forces must disperse, and that we must accept their dispersion as normal. As opportunity offers, units are expected to concentrate for a crash action, execute an exploit-the-fission mission, and then scuttle back to their dispersed positions. So long as this threat of the use of nuclear weapons exists, all units must remain dispersed indefinitely.

Now this is a useful concept, so far as it goes. And it goes pretty far. However, it does not go all the way; useful refinements can now be brought into focus by those who have, up to now, peered steadily, if not brilliantly.

Any soldier knows the story of the two trios of ancient times who had to fight for the decision between their nations. Two of the Blues rapidly dispatched an opponent apiece, leaving

three against one. The surviving Red turned and, to the dismay of his compatriots, ran away. After a while, though, his three pursuers were so strung out they were no longer able to support one another, whereupon the doughty champion whirled about and efficiently sent the spirits of his three Blue opponents soaring to Valhalla one by one.

The lesson? In actual combat—particularly that type of decisive “personal” combat we call infantry action—men and weapons must be close enough to support one another constantly. Dispersion can lead to defeat. We recognize this even in the concept of the future cited at the beginning, which necessarily includes a decisive phase where victory hinges upon success in close and concentrated fighting.

The major refinement I suggest is this: Until tactical atomic weapons are actually used, dispersion is going to get fairly short shrift. Perhaps it is true that no unit of division size or larger will ever again deploy normally in pre-atomic patterns. Even for divisions, the practice of constantly remaining widely dispersed on a battlefield that continues to remain nuclear-free over a long period will eventually wear quite thin. Still, to risk the loss of most of a division at one blow is probably too great, even in the circumstances I postulate.

However, I doubt that units up to include battle group will long remain dispersed in battle areas that have so far remained nuclear-free and where infantry action is taking place with any degree of frequency. To be sure, as hostilities begin and both sides feel each other out, even battle groups initially will maintain atomic-age dispersion. But if time passes with no exchanges of atomic blasts, the nature of infantry action will quickly incline units to concentrate.

In fact, they will obviously operate at a disadvantage in infantry action

unless they do concentrate. I can hear objections to this premise. “This may be just what the enemy will wait for! A whole battle group that can be destroyed by one atomic blast!”

Not at all likely. The enemy will hardly begin using atomic weapons to bag one battle group, whether it is dispersed or not. Nothing that occurs locally on the battlefield will influence the enemy commander's decision one way or another. The decision to begin a nuclear war will be in the hands of his political bosses, who will fully evaluate the grave consequences.

To be sure, the enemy's political leaders may delegate the decision to their field commander, so that he might select the moment at which to gain the greatest tactical advantage. The enemy commander will not, even in one theater, find *all* our units equally and simultaneously vulnerable. Of course, the moment nuclear weapons are used, the news will almost instantly circle the globe that the lid is off—at least for tactical weapons, or under any other special conditions that prevail at the time. In any event, once the first atomic warhead is detonated, our units all over the world will then—but only then—be told to act according to the concept envisioned as standard for nuclear combat.

We may lose one or several battle groups in the theater the enemy has chosen. That is the risk we will have to accept. Perhaps an alert intelligence system will assist us in diluting the effect of the enemy's surprise action. But unless our forces on nuclear-free battlefields concentrate their power, we will be losing one battle group after another—picked off in detail like the strung-out warriors of old. Under nuclear-free conditions, extreme dispersal is dangerous. Dispersal will be used only under atomic conditions. That is, except during the feeling-out period, dispersion will not become normal until *after* the first nuclear blast.



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I do not mean to imply that we need not train in dispersion tactics. We will need both dispersed and concentrated dispositions, but I would hesitate to choose which is the more important. Naturally, we cannot afford to wait until the first atomic round is on its way before we train our soldiers in what to do after it arrives. Every unit must be trained, equipped, and

ready to shift into its atomic-battle formation with the speed and celerity approaching those of a college half-time marching band breaking up one letter to form another.

Doubtless, the refinement expressed will soon be itself further refined by some far-sighted observer peering into the future whose wits are more sharply focused. Until that happens, how-

ever, the modified view I have expressed may merit consideration.

Lieutenant Colonel Anthony L. Wermuth, Infantry, after a return tour in the Pentagon from service in the Far East, is a student at the Army War College. Colonel Wermuth, an occasional contributor, wrote "Modernization Minus" in our October 1958 issue.

THE APC CAN FIGHT

CAPTAIN BOYD T. BASHORE

I would like to comment on the excellent "Armored Infantry is Different," by Lt. Col. Bergen B. Hovell [November].

In spite of the fact that armored infantry is beginning to play an ever greater part in the tactics of Pentomic infantry, it still remains essentially a field in which the average infantryman has had little, if any, practical experience. The number of articles on armored infantry in our service magazines during the last ten years can be counted on your fingers. Colonel Hovell's was a very fine outline of the whole scope of armored infantry, and will help spread the word.

The caption across pages 52 and 53 says "Armored infantry's vehicle is neither a 2½-ton truck nor a tank. The armored personnel carrier has cross-country mobility and provides more protection than the 2½-ton truck. *But it is not a fighting vehicle like a tank and lacks armor's thick skin.*" [Italics supplied.]

The APC is incapable of tank missions. However, it is a splendid anti-personnel fighting vehicle within the limits of its design, and I believe this feature should be played up. All too few commanders of armored infantry use the carrier to its greatest fighting potential. The caliber .50 machine gun, especially in the turret mount, gives the APC firepower that far surpasses that of any other weapon in the infantry squad.

Too often I have seen armored infantry vehicles pull into a dismount position in defilade. Rifle squads dismount and move out. The MG squads also dismount with their caliber .30 weapons and set up a defiladed base of fire within a few yards of the carrier. The much greater firepower of the mounted .50 is either completely ignored, or left to the driver who has his

hands full in moving his vehicle.

Whenever possible, all, or at least some, of the gunners of an armored infantry unit should remain mounted and man the machine gun on their own and other carriers, at the expense of the TOE .30s. During many tactical situations where mounted movement is at all possible, the .50s, from carrier in defilade, usually can support the attack as well or better than the dismounted .30s. Where practicable, the MG squads should be split up into SOP teams and spread out to man all unused weapons of rifle and mortar squad carriers. This should be the rule, and dismounted use of TOE guns the exception, except where terrain prohibits.

In TOE units this procedure is made even more effective through the splendid communications between carriers. In the first place, fire of individual guns can be controlled by radio, the gunner wearing a headset, and these mobile pillboxes can be maneuvered as desired. Such a system gives the platoon leader four supporting caliber .50 machine guns tied in on his radio net. This is a far cry from the two .30s, usually voice-controlled, or at best controlled by the PRC-6 he has when his MG squad dismounts. Company control gives the unit commander a maximum of 17 radio fire-

controlled caliber .50 guns at his fingertips.

For some reason, the squad carriers in the Pentomic infantry division, as differentiated from those in armored divisions, have no radios. This sharply limits their effectiveness through the control I have described. (The main tactical use of the carrier as visualized by the infantry seems to be as a means of making the reserve mobile.) But the firepower potential is there. With a little ingenuity it can be exploited. As a long-range plan, these infantry division carriers should be identical with the armored division's APCs.

For some reason, we infantrymen have been reluctant to incorporate into the Pentomic structure the results of almost 30 years of armored infantry experimentation that began in 1930, when Major General Adna Chaffee was told to assemble a mechanized force. No matter what euphemism we apply to it, what we end up with is simply armor's armored infantry. Combine armored infantry's splendid maneuverability with Army aviation's air mobility, and you'll have the answer. Without them the infantryman is as passé as horse cavalry.

I don't mean to imply that Colonel Hovell's article indicated that these caliber .50 OVM machine guns should be ignored. He mentioned their use many times. I simply take exception to the caption's statement that the carrier is not a fighting vehicle. The only thing the carrier lacks, if it is to be properly used, is the tank's big gun. I'll agree the APC is not a tank-killing vehicle, but when properly used it is as good a mobile pillbox for anti-personnel fighting as anything you'll find. In many respects it is much more efficient than many of the machines we used to call "tanks" before and even during the early days of World War II.

This department is designed to accommodate the short, pithy and good humored expression of ideas—radical and reactionary, new and old. We pay for all contributions published but you deserve to be put on notice that the rate of payment depends upon the originality of the subject and the quality of writing rather than length. This department is hungry for contributions, so shoot that good idea in . . . today.



$$\dot{x}_{j+1}(t) = \dot{x}_j(t-h) \text{ if } x_j(t-h) - x_{j+1}(t-h) = \beta S_c$$

● Problem: what doctrine for a motorized military convoy will mean the highest over-the-road speed? Solving such a problem by experimental, trial-and-error methods is difficult, long, and costly . . . yet answers to such questions are vital to our modern, mobile U. S. Army. Scientists of *tech/ops* solved this one by devising and applying a mathematical model to describe a convoy, programming this model for a large digital computer. *Result*: another application of *tech/ops*' research techniques to solve a problem whose solution by conventional means would have been prohibitively expensive . . . and a typical example of *tech/ops*' pioneering work in operations research and broad scientific research and development for industry, business and government.

Two other formulas complete this model:

$$\dot{x}_{j+1}(t) = V_c \text{ if } \beta S_c < x_j(t-h) - x_{j+1}(t-h) \leq S_c \quad (2)$$

$$\dot{x}_{j+1}(t) = \frac{1}{T} [x_j(t-h) - x_{j+1}(t-h)] \text{ if } x_j(t-h) - x_{j+1}(t-h) > S_c \quad (3)$$

The symbols have these significances: $x_j(t)$ is the position of the j th vehicle at time t ; V_c is the assigned convoy speed; S_c is the assigned spacing between succeeding vehicles in the convoy; h is the driver reaction time; β is a constant. Boundary conditions: $\dot{x}_j(t) \geq 0$; $x_1(t)$ is a given (known) function.

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Irons in the Fire

Cargo-Personnel Carrier

A six-seat personnel carrier that converts to a three-quarter-ton truck is under prototype production by Willys Motors, for the Army Ordnance Corps. Four of the lightweight tactical vehicles will be delivered in March for tests by the Army and Marine Corps. Made largely of aluminum, the vehicle weighs less than the Jeep but has a much higher payload capacity, about 1,500 pounds, plus driver and one passenger. It is powered by a 100-horsepower air-cooled aluminum engine. It can also be used as an evacuation vehicle, carrying four litter cases, as a carrier for electronics and radio equipment, and as a mobile mount for the 106mm recoilless rifle.

Lightweight Maintenance Shop

The Transportation Corps' Research and Development Command has developed a new lightweight aircraft maintenance shop which can be airlifted by helicopter and moved on the ground by a two-and-a-half-ton Army truck. Designed for use by Army aviation units in field operations, the shops are equipped with lightweight tools.

Stronger Paper for Maps

Sponsored by the Army Engineer Research and Development Laboratories, the National Bureau of Standards has investigated the strength characteristics of synthetic fiber map paper. Tests for dimensional stability, folding endurance, and bursting and tearing strengths were made on three experimental

papers and two commercially produced papers. Results show that a polyester-cellulose sheet has high dimensional stability and better strength properties than commercial map paper. A paper containing polyamide fibers has low dimensional stability, but exceptional folding, tearing, and bursting strengths.

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A highly mobile, air transportable communications center, designed to direct fast moving Army forces, has been brought out by the Signal Corps. The system provides a



New "Polyhedral" aluminum hull of Higgins boat

HOT SPARKS

The election of George M. Bunker, president and chairman of the board of the Martin Company, to the board of directors of the Bulova Watch Company, has been announced by General Omar N. Bradley, chairman of the board. Both Martin and Bulova hold contracts for development of the Pershing missile.

Brig. Gen. Frederic L. Hayden, USA, retired, has been named consultant for the Defense and Technical Products Division of Rheem Manufacturing Company, Downey, Calif. During his active service, Gen. Hayden headed several Air Defense and Guided Missile Commands.

After exhaustive tests Hiller's new three-place 12E helicopter has been awarded official Type Certification by the Federal Aviation Agency.

The Army has ordered 116 three-place observation helicopters (H-23D "Raven") from the Hiller Aircraft Corp., at a cost of \$6 million. Scheduled for the 1960 calendar year, the order is slightly larger than the 108 "Ravens" ordered in calendar year 1959. The aircraft is used for training, observation, reconnaissance and evacuation.

The prop-jet C-130 Lockheed Hercules has completed tests expected to qualify it as the largest assault transport aircraft in the Air Force. In 50 tests, the troop and cargo carrier, weighing 116,000 pounds, made take-offs and landings on the rough, sandy loam fields around Eglin Air Force Base, sometimes sinking more than 20 inches into the soil. The plane's performance met Army and Air Force standards for an assault transport capable of landing men and supplies anywhere without paved runways or even hastily prepared fields.

nucleus for a communications network of radio, telephone, telegraph and teletypewriter combat links. Covering hundreds of miles, the new system can get an urgent message through to a distant outpost even with direct lines broken or destroyed. It consists of separate aluminum "shelters," each fully equipped and independent, operating on its own supply of electricity or on a central power source. The system is transportable by helicopter or truck.

"Swallow" Jet Drone on Way

A small pilotless jet drone, labeled the SD-4 "Swallow," is under development by Republic Aviation's Guided Missiles Division, Mineola, N. Y., under a \$25 million contract with the Army. The battlefield surveillance drone will use a variety of advanced sensory techniques, including radar, infrared detection and photography. The Swallow has a delta wing spread of 11 feet, and employs an unusual air-intake duct for the jet engine.

Progress on Pershing

A \$54 million contract for continuation of research and development of the Pershing weapons system has been awarded to the Martin Company of Orlando, Fla., by the Army. Pershing, a selective range, surface-to-surface ballistic missile, has a built-in guidance system, enabling it to move on target without the possibility of outside jamming. Operating on a "shoot and scoot" basis, Pershing will be transportable.

Emergency Medical Packet

A new medical packet, called Phase I Emergency Medical Treatment Unit, has been jointly devised by the military medical services. Designed to meet conditions immediately following a disaster, the emergency packet will provide medical material for treatment

The Willys convertible cargo-personnel carrier carries up to six passengers



of some 100 casualties for about 72 hours. The packet is much more than a first aid kit, having 23 items in nine component cartons: two master packs containing a synthetic plasma expander, surgical instruments and other items, one fracture pack, two burn packs, and four wound packs. Training in their use will be carried out by all three services.

"Sergeant" in Hardware Stage

The nation's pioneer second-generation surface-to-surface tactical missile—the Army's Sergeant—is entering the developmental hardware stage. The Army is spending \$22 million with Sperry Rand Corporation, Salt Lake City, on Sergeant. As the Sergeant missile is produced, it will replace the Corporal.

Water Skipper

A 30-passenger boat, of non-corrosive ALCOA aluminum, has been developed by the Higgins Boat Company, New Orleans. Getting a boat through the water faster and with heavier loads was the idea behind the "Polyhedral" hull design, which allows the boat to glide over the surface at 40 miles per hour, even in waves over three feet. The 52-foot boat has shown strength, seaworthiness, maneuverability and load-carrying ability in tests and is expected to prove a major breakthrough in rescue and patrol boat work.

Multi-Channel Monitor

A 100-channel operation monitor for military and industrial applications is being produced by Brush Instruments Division of the Clevite Corp., Cleveland. The military applications would include checkout of missile and rockets, and other forms of complex circuitry such as traffic monitoring and testing of telephone switching equipment. The instrument will record simultaneously up to 100 separate and distinct operations on a moving chart 12 inches wide. Approximate dimensions are 19 by 16 by 17 inches. Weight is 100 pounds net.

Interior view of Army's airborne combat communications center



ORDNANCE SLICES A METEORITE

FRANK R. HURYNOWICZ

IN September 1957—the month before Sputnik I—engineers at the Army Ordnance's Watertown Arsenal Laboratories successfully cut the largest slice—about four hundred square inches—ever taken from a meteorite. This cross-section, from Harvard University Museum's half-ton meteorite, Carbo, is destined to be of profound importance to cosmological studies and, consequently, missile development.

The large specimen will enable scientists to obtain significant data dealing with the history of meteorites, including how long Carbo took to reach Earth, the time of its collision with other bodies in space, the energy of cosmic rays, and the constancy of intensity of these rays. From these and subsequent investigations, they hope to gain important information regarding the shape of meteorites before they enter Earth's atmosphere, and exactly what happens to iron (the basic substance of Carbo) during flight through the atmosphere at approximately ten miles per second.

This unique cutting operation, perfected by Arsenal engineers, will also enable scientists to measure in greater detail the distribution of rare (spallation) isotopes through the meteorite. (Isotopes arise from the action of cosmic rays on the iron content of meteorites.)

The knowledge acquired will have an important bearing on missile and satellite studies. As a result, the project becomes of great interest to the Ordnance Corps. The job of cutting was given to Watertown because of that Arsenal's capacity and effective methods of handling such a large-scale project, and the long experience of its technical personnel in cutting both soft and hard metallic materials. In addition, the Arsenal's laboratories have made various studies which investigated the melting of metals during supersonic flight through the atmosphere. These studies have included high-velocity missiles and projectiles.

Carbo was discovered on a ranch in Mexico in 1923 by cowboys on their annual roundup and named for the nearest town, some forty miles away. It was purchased by the Harvard University Museum and brought to Cambridge, Massachusetts, in 1929. The first isotope measurements were made on the specimen in England at the universities of Durham and Oxford. The Museum's officials subse-

quently gave their consent for a 3/4-inch-thick slice to be taken from the meteorite when it was found necessary to cut a cross-section in order to learn more of internal isotopic structures and distribution.

Careful preparation was required because of the specimen's hardness and irregular shape, the necessity of not heating any of the material and of recovering all chips, and the small and uniform thickness desired. The recovered chips will aid investigators in their studies.

The meteorite was mounted for cutting in a plaster case surrounded by a steel frame. The frame was erected in two parts, leaving an opening in the center to avoid contamination by the cutting blade of the band saw. A band saw was used in order to fully recover chips from the specimen at every two inches of cutting length. Three roller bearings on the outer frame reduced friction caused by the weight of the specimen against the moving blade. The meteorite was then drawn through the machine by a series of weights and a screw attachment. Cooling was effected by a jet of air so as to further avoid contamination. The speed of cutting was 100 to 125 feet per minute; progress through the material was .003 to .006 inches per minute.

During the sawing, small hard inclusions (minute gaseous, liquid or solid foreign bodies) greatly affected the rate of cutting and the subsequent wear on the high-speed steel blade. Because of this variable wear, highly accurate weight measurements of the blade were taken before and after each cutting operation. This determined how much of the blade's material had contaminated the recovered chips. It became obvious after sawing completely through that even though the blade entered and left the meteorite in a straight line, tiny hard spots in some areas forced it into a curved path through the specimen, deflection in one section being as much as a quarter inch.

For the second cut, since additional chips were not required, an abrasive cut-off machine was used.

This highly important work was directed by Major Russell F. Scott, Jr., Director of Watertown Arsenal Laboratories; and Messrs. Edward N. Hegge, Sven E. Siemen and Nicola Rosato, ordnance engineers.

THE MONTH'S BOOKS

Intricate Chinese Puzzle

WEDEMEYER REPORTS!

By Gen. Albert C. Wedemeyer
Henry Holt & Company, 1958
497 Pages; Illustrated; Maps; Index; \$6.00

Reviewed by

RILEY SUNDERLAND, who, with Charles F. Romanus, wrote *Time Runs Out in CBI*, the final volume in the Army's official history of the CBI Theater.

This is the first of two projected volumes of memoirs by General Wedemeyer. To list the posts he has held is almost to recapitulate World War II and the early postwar years. He was a member of the Operations Division of the old War Department General Staff; Deputy Chief of Staff, Southeast Asia Command; Commanding General, U. S. Army Forces, China Theater; finally he was chief of a mission to China. Reading his correspondence files and staff papers reveals an officer who was articulate, lucid, a good organizer, sometimes prescient, and with an awareness of political reality. His opportunities for observation and his talents should have produced a first-rate book, but this volume is disappointing.

Wedemeyer Reports! may be compared to an intricate Chinese puzzle that hides within it a riddle. The puzzle is composed of several interwoven strands, often hard to identify and separate. One finds Wedemeyer's views on the art of war, a critique of Anglo-American strategy, an account of his observations and experiences while in OPD, a report on his work as China Theater commander, and an attempt to present himself as having always been aware of the menace of communism, and as having expressed that awareness in his official actions, particularly as U. S. theater commander in China.

As a student of war, Wedemeyer is a classicist and a conservative. He believes war is a political act, fought for political ends. He would use all the resources of the state for a victory that would be both political and military, meanwhile taking care that the great departments of state act together as a team rather than as competing specialty acts. Here, Wedemeyer early practiced what he preaches today, for this reviewer recalls attempts by him to obtain political guidance for the Joint Chiefs in World War II.

Wedemeyer's account of his observations and actions while in OPD seems to add nothing to what has been placed on record by the Army's historians, and in regard to two professional topics is curiously lopsided. What he has to tell is almost entirely an account of the attempt to settle on a firm Anglo-American strategy in 1942-43. The Americans wanted to direct effort toward a cross-Channel attack in 1943, with the option of an emergency strike in the event of Soviet collapse in 1942. The British preferred the Mediterranean theater. By now, this field is well ploughed.

What seems odd about Wedemeyer's account is that he ignores the related problems of Allied landing craft and Axis submarines. His index doesn't list either; his text has but a stray paragraph or two on each. Yet it was the paucity of landing craft, resulting from the need to build anti-submarine escorts, which hobbled Allied strategy in 1942 and 1943. In his text Wedemeyer asserts there were enough landing craft to place an Anglo-American task force on the French coast in 1942 and simply dismisses the problem of maintaining it once it was ashore. His failure to discuss these two major problems, their implicit dismissal as minor, make his account of his work as a planner—indeed, his whole story of the Anglo-American negotiations in 1942-43—rather lopsided and hardly a professional record.

His critique of Anglo-American strategy could have been valuable, for Wedemeyer is a skilled and articulate soldier.

Moreover, many years have passed since war's end. We have a fair idea of the Axis order of battle and know a great deal of their planning. Therefore, we can begin to judge how skillfully the Allied leaders fought their campaigns. Unfortunately, Wedemeyer has largely omitted research on the German and Japanese sides of the war. His judgments of Allied strategy are largely based on random impressions of Axis strength and plans, and these impressions are sometimes grossly inaccurate. In his long bibliography, only three works treat of the German side; none, of the Japanese. One is General Fuller's *Military History of the Western World*, which necessarily gives a brief, second-hand account; the other two are by men far down the German chain of command.

Wedemeyer's treatment of the possible

menace of Germany to the Western Hemisphere is not impressive. On the authority of General Fuller, he assures us that the German archives have no evidence that Hitler—and the reference in Wedemeyer is to Der Führer personally—thought of attacking the Western Hemisphere. As regards Hitler's recorded thoughts this may be true. However, the *Führer Conferences on Naval Matters* records that the German Naval Staff looked forward to a full settlement of accounts with the British Commonwealth and the United States once the Continent was subdued. Given the high professional skill of the German armed forces, given the impetus of victory, given the attraction of the Latin mind to authoritarian principles, and given the menacing weight of the Japanese Navy of 1940, there seemed a genuine military problem as regarded Latin America in 1940. Indeed, contrary to Wedemeyer's impressions, the President's military advisers so concluded, and the partial mobilization of 1940 resulted.

If, then, Wedemeyer's impressions of the strength, the deployment, and the plans of the Axis forces are as incomplete and mistaken as his memoirs indicate, his analysis of the steps taken by the Anglo-American leadership to solve the military problems presented by Germany and Japan would seem to be fatally weakened.

General Wedemeyer's report of his work as theater commander in China has two aspects: a factual, interesting account of his attempts to build a better Chinese army on a foundation of Sino-American cooperation; and a claim that he was an early and prescient opponent of the Chinese Communists. Of these two, the first is worth the attention of any officer who must deal with an ally. As for the second, let's look at a part of the record which this book almost completely omits:

On 27 November 1944 Wedemeyer recommended arming the Chinese Communists.

On 2 December 1944 he suggested flying 5,000 Chinese Communists, whom he proposed to arm, into Nationalist territory, there to fight the Japanese.

At about the same time, he approved the plan of his chief of staff, General Robert McClure, to obtain Nationalist approval to fly 4,000 to 5,000 U. S. technicians into Chinese Communist ter-

ritory, together with supplies for the Communists.

On 27 January 1945 Wedemeyer quoted to Marshall, without dissent, a report from the OSS that Wedemeyer's policy was to give the fullest support to the Chinese Communists.

On 9 July 1945, after Marshall asked for his suggestions on future U. S. policy regarding China, Wedemeyer replied that the U. S., the USSR, and the British Commonwealth should, in his own words, coerce the Nationalists and Communists into a coalition. That Wedemeyer's associates understood him to mean the plain English text of his radio is shown by correspondence in his headquarters files which discusses ways of forcing Chiang to take the Communists into his government.

These matters are perhaps the most relevant to an appraisal of the book, but to this reviewer the most distressing passage is that in which Wedemeyer writes: "Chiang was, of course, in a desperate situation. Chennault had told him that Stilwell had deliberately refused to give him help in the defense of Kweilin in order to compel Chiang to yield command of the Chinese armies to Stilwell."

As theater commander Wedemeyer must have known, and must have been aware, that Chennault knew it was not Stilwell but Chiang himself who had forbidden shipment of arms to the Chinese defending Chennault's bases in East China and Kweilin. Moreover, Wedemeyer had available a manuscript detailing his correspondence with Chennault about persuading the Generalissimo to lift his embargo. Wedemeyer, thus, is making a charge that cannot be sustained from the records.

These, then, are the strands of the Chinese puzzle that is the first volume of Wedemeyer's memoirs. The riddle that the strands hide is this question: Why did he write in this way? If he had set his assistants to checking the German and Japanese sources and then leavened his judgments with a little charity, his critique could have borne real weight. Had he been content to tell what he said and did as theater commander in China, and had he been content with having seen the menace of Chinese communism long before his associates in the Truman Administration—surely that would have been enough. That he erred in 1945 by recommending a Nationalist-Communist coalition would have been more than balanced by his efforts to redress the matter in 1946 and 1947. But he does not accept the past and would have the reader believe that on the issue of Chinese Communism he has always been right, capping this with a gratuitous attack on General Stilwell, as though arming the Communists and trying to force Chiang into a coalition with them had been Stilwell's policies

rather than his own.

By publishing his memoirs Wedemeyer invited checking them against the record. One must hope that in his forthcoming book he will present a paper like those lucid, masterly staff studies of the war years that this reviewer read with such pleasure and respect.

A Moral Pledge Fulfilled

LEYTE, JUNE 1944—JANUARY 1945 (Volume XII of History of United States Naval Operations in World War II)

By Samuel Eliot Morison

Little, Brown & Company, 1958

445 Pages; Illustrated; Maps; Index; \$6.50

Reviewed by

COL. ROBERT F. COCKLIN, Artillery, USAR, who served with the Army in the Pacific and who reviewed other volumes in this series.

On 20 October 1944, the U. S. Sixth Army landed on Leyte to begin the recapture of the Philippines. This was a moment of great significance, both to the Americans and the Japanese. For the Americans it meant the fulfillment of a moral pledge. The Japanese were quick to recognize it as the beginning of the end unless it could be decisively beaten. Accordingly, they put forth their maximum land, sea and air effort which resulted not only in extremely bitter fighting on the ground, but in the greatest sea battles in history.

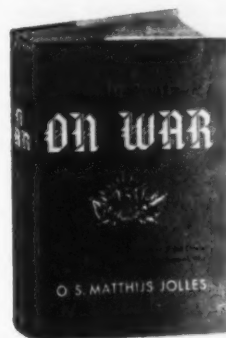
These are the abundant ingredients for this twelfth volume of Admiral Morison's history of U. S. naval operations in World War II, and he makes much of them. This is easily the most interesting and absorbing volume that has so far been published.

This being a naval history, it is quite logical that the land fighting runs a poor second to the momentous battles on the sea. Even so, landlubber readers will find the narrative highly interesting and entertaining.

Morison sets the stage for the main event by describing the occupation of Morotai and the operations on Peleliu, Angaur and Ulithi. He also gives an account of great air battles over Formosa which immediately preceded the Leyte operation and which resulted in tremendous air losses for the Japanese at the hands of our carrier pilots.

Now to the main event. Here's how Morison evaluates it, in one succinct paragraph: "As the amphibious vessels completed unloading on the shores of Leyte Gulf and Sixth Army extended its beachhead, Japanese naval forces were sallying forth to give battle. The quadripartite Battle for Leyte Gulf which resulted comprised every type of naval warfare invented up to that time—gunfire of heavy and light ships, bombing, suicide-crashing, strafing, rocketing, and torpedoing by land-based and carrier-

Clausewitz...



ON WAR

TRANSLATED BY

O. S. MATTHIJS JOLLES

No military student is educated, no officer is competent for higher command or staff duties, until he has read and re-read *On War*.

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COMBAT FORCES BOOK SERVICE

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Selected Check List of the Month's Books

This run-down of some of the books received for review during the month preceding our deadline is to give our readers who like to follow current literature a monthly check list of the most important, useful and potentially popular books. Full reviews of some of these books may appear in this or subsequent issues. Any of these titles may be purchased through the Combat Forces Book Service.

THE AIR: Conquest of Space and Time. By Edgar B. Schieldrop. Philosophical Library, 1958. 256 Pages; Illustrated; Index; \$12.00. From man's earliest attempts to fly to his attainment of supersonic speeds. A full treatment of the development of balloons, dirigibles and heavier-than-air craft, with a glimpse into the future.

—AND A FEW MARINES. By Col. John W. Thomason, Jr. Charles Scribners Sons, 1958. 667 Pages; Illustrated; \$5.95. A reissue of the book first published in 1925. The 37 stories range from WWI battlefields to South America, the Caribbean and China stations. Captures the spirit of that period which produced what Thomason called the Old Breed of Marines. He has good words for the Army, too.

ANTARCTIC ASSAULT. By Comdr. Paul W. Frazier, USN. Dodd, Mead & Company, 1958. 237 Pages; Illustrated; \$4.00. The saga of Dufek's volunteers who pioneered the last frontier to build bases for the IGY. That's the subtitle, which fully describes the author's work. Frazier was Admiral Dufek's operations officer on Deep Freeze II.

BATTLESHIP SCHARNHORST. By Albert Vulliez & Jacques Mordal. Essential Books, 1958. 256 Pages; Illustrated; Maps; Index; \$6.00. Two French naval historians tell the history and exploits of the German pocket battleship, based on a careful study of British and German documents, and from the ship's own papers.

BRASSEY'S ANNUAL, 1958. Edited by Adm. H. G. Thurstfield. The Macmillan Company, 1958. 402 Pages; Illustrated; Maps; Index; \$9.50. This year's edition is mostly concerned with strategic problems arising out of the development of nuclear weapons and their possession by both West and USSR.

THE CIVIL WAR. By John S. Blay. Thomas Y. Crowell Company, 1958. 342

Pages; Illustrated; Maps; Index; \$10.00. A superb job of bookmaking and a masterpiece of condensation and arrangement. Tells the complete story, chronologically and geographically. Illustrated with 365 drawings by the foremost contemporary artists that tie in with the text. By far the best outline, yet complete, history of the Civil War.

THE COMPLETE BOOK OF SUBMARINES. By Comdr. C. W. Rush, USN, with W. C. Chambliss & H. J. Gimpel. World Publishing Company, 1958. 159 Pages; Illustrated; Index; \$4.95. The story of man's conquest of the depths, from Alexander the Great to the nuclear-powered submarines. The authors write with the authority of men who have lived, sailed, and fought beneath the seas, on the surface, and in the air.

GENERAL ELECTRIC TRANSISTOR MANUAL. Semiconductor Products Department, General Electric, 1958. 168 Pages; Illustrated; Index; \$1.00. Third edition of a manual first introduced in 1957, of which close to a quarter of a million have been distributed to electronics experts, experimenters, radio hams, tinkers and high-school students.

GENTLE NEIGHBOR: Poems by (SP2) Lee Tucker, USA. Vantage Press, 1958. 96 Pages; \$2.95. Simple, straightforward, sincere, these poems, says the soldier-author, were written between bells, in a hospital ward where he was on duty.

HISTORIC DOCUMENTS OF WORLD WAR I, by Louis L. Snyder; HISTORIC DOCUMENTS OF WORLD WAR II, by Walter Consuelo Langsam. D. Van Nostrand Company, 1958. 191 Pages each; Paper only, \$1.25 each. Documents relating to the origin, course and results of the World Wars. Treaties, writings and utterances of soldiers and statesmen, legislation and other documents. No library is complete without these.

HISTORY OF U. S. MARINE CORPS OPERATIONS IN WORLD WAR II. Volume I: Pearl Harbor to Guadalcanal. By Lt. Col. Frank O. Hough, Maj. Verle E. Ludwig, and Henry I. Shaw, Jr. The first volume of the revised official history, reassessed in the light of the comment and criticism evoked by the publication of the previous fifteen monographs, each on a separate campaign. This includes operations at Wake, Midway and Guadalcanal.

THE MEMOIRS OF COLONEL JOHN S. MOSBY. Indiana University Press, 1959. 414 Pages; Illustrated; Maps; Index; \$5.00. Edited by Charles Wells Russell, foreword by Virgil Carrington Jones. Personal account of one of the truly heroic figures of the Civil War, long out of print. Mosby was a genius at hit-and-run tactics. His autobiography bears no relation to the phony "Gray Ghost" TV serial.

NORTH TO ANTIETAM: Battles and Leaders of the Civil War, Volume II. Thomas Yoseloff, 1958. 760 Pages; Illustrated; Maps; \$4.95. A real buy for the Civil War buff. This is a direct reprint, in a popular edition, not one word deleted. The only difference from the original of the 1880s is reduction in size. The standard four-volume set costs \$30.

THE STORY OF THE SECOND WORLD WAR. By Katharine Savage. Henry Z. Walck, Inc., 1958. 271 Pages; Illustrated; Maps; Index; \$4.00. A good outline history, covering all phases of the war, aimed at younger readers.

V-2. By Maj. Gen. Walter Dornberger. Ballantine Books, 1958. 237 Pages; Illustrated; Maps; Paper, \$5.00. The inside story of Hitler's secret weapon that almost changed the course of history. General Dornberger, now a missile scientist with the U. S. Army, directed Peenemünde, the German experimental rocket station. [Reviewed in *Combat Forces Journal*, July 1954].

based planes; torpedo attacks by submarines, destroyers and motor torpedo boats. Every naval weapon but the mine was employed by both sides. In every part the action was memorable and it resulted in the end of the Japanese Fleet as an effective fighting force. But before victory was attained the situation was puzzling, mistakes were made on both sides and anything might have happened."

If there is any understatement, it is in the last sentence. After reading this and several other works, including Japanese versions of this battle, I would take the view that the mistakes that were made were lusus. It was only through good fortune, unusual daring and courage that the U. S. Navy emerged triumphant and that the landing force

didn't get clobbered. Morison is more than restrained in his evaluation of Admiral Halsey's actions during this period. It seems apparent that the confusion and faint heart of the Japanese commander, coupled with some real deriding-do by Halsey's subordinates, are all that kept him from being the biggest goat of the war.

The four battles involved in this overall operation are too complicated for close examination here. In a nutshell, they were the Battles of the Sibuyan Sea, largely an air attack on U. S. naval forces; the Battle of Surigao Strait, judged by sailors to be the last surface engagement between battleships of the line; the action off Samar, which greatly endangered the landing force; and the battle off Cape Engaño, which was a

strategically successful decoying operation by the Japanese.

The enemy entered the fray with three fleets. His Northern Fleet of 17 ships was intended to decoy Halsey out of the landing area, which it did. He took off with 65 ships to go after the Northern Fleet, leaving San Bernardino Strait wide open. The Japanese stronger Center Fleet steamed through these and got a good crack at our largely undefended "jeep" carriers. Had not these courageous sailors put up such a thoroughgoing battle, and had not the Japanese admiral commanding gotten cold feet, we would have been dealt a crushing defeat. The Japanese Southern Fleet fought Kinkaid in the mighty struggle in Surigao Strait.

Somehow or other, Morison's efforts

to explain Halsey's actions, which thoroughly alarmed some of his subordinates, does not quite come off. Neither does his explanation of the Japanese commander's failure to press home his tremendous advantage. As Morison put it, "In this series of night and day actions, the mistakes made by the Japanese sea lords were so much more numerous than ours that they added up to costly defeat." The splendid accounts of the actual fighting and the sheer bravery and resourcefulness of the U. S. Navy's officers and sailors shine like a bright beacon through the dim haze of confusion which seems to have pervaded the episode.

Morison concludes with a brief summary of other operations in the Leyte area which were aimed mainly at cutting the reinforcing efforts of the Japanese, and with a quick summary of submarine actions during the same period. In another setting these would deserve more attention, but the big battles stole the show.

Morison quotes the Navy Minister, Admiral Yonai, who after the war gave this appreciation of the import of the battle for Leyte Gulf: "Our defeat at Leyte was tantamount to the loss of the Philippines. When you took the Philippines, that was the end of our resources."

This particular volume surpasses the high standard of the previous books in this series. No doubt there has been greater opportunity for the author to study this action, and certainly he has had abundant first-hand source materials from enemy as well as friendly participants. But you get the feeling that an author with salt in his blood was performing a labor of love in describing some of the greatest naval history of our times.

Last AAF Volume

THE ARMY AIR FORCES IN WORLD WAR II; Vol. 7: Services Around the World
 Edited by Wesley Frank Craven & James Lea Cate
 University of Chicago Press, 1958
 667 Pages; Illustrated; Maps; Index; \$8.50

Reviewed by

LT. COL. H. A. DEWEERD, Infantry, USAR, now on the staff of RAND, who reviewed other volumes in this series.

This is the final volume in the history of the Army Air Forces in World War II. It presents an account of the various service units common to the whole AAF: Air Transport Command, Aviation Engineers, Air Forces Weather Service, Army Airways Communications System, AAF Medical Service, Air-Sea Rescue Service, Air WAC, the redeployment, and the demobilization programs. While it lacks some of the excitement and appeal of earlier volumes relating to air combat, it rounds out the immense administrative

and services history of the AAF.

One of the most interesting and provocative chapters is that by Dr. George V. LeRoy on the AAF Medical Service and on the factors which differentiated aviation medicine from that practiced during World War II under the Army's Surgeon General. Dr. LeRoy's chapter gains weight and acceptance from the fact that he served in World War II as a medical officer in Army Ground Forces. During the war some ground combat soldiers looked with a jaundiced eye on the AAF's demands for special medical treatment to individual airmen, a demand almost always incompatible with the environment of ground combat.

Martin R. Goldman, former combat crewman on a B-24 shot down over Germany, contributes a notable chapter on morale. Discounting a good deal of the off-we-go-into-the-wild-blue-yonder enthusiasm which sometimes distinguished the AAF, Goldman believes that in general the morale in the air forces was "fair to good." It varied greatly in different units, but there were certain "constants" or stabilizing factors such as confidence in ultimate victory, a widespread realization that the AAF's leaders were making efforts to secure the well-being of and to establish preferences for their men over the other branches of the armed forces.

Those readers interested in the antecedents of the present find a valuable chapter on the Air Transport Command. Its wartime experience and expansion prepared it to achieve the only important non-violent triumph won over communism after VJ-day—the Berlin Airlift. The book ends with an account of the reorganization of the air arm in 1946 which led to the establishment of the separate U. S. Air Force.

Handbook for Psyops

A PSYCHOLOGICAL WARFARE CASEBOOK
 By William E. Daugherty & Morris Janowitz
 The Johns Hopkins Press, 1958
 880 Pages; Index; \$12.50

Reviewed by

LT. COL. PAUL M. A. LINEBARGER, Army Intelligence, USAR, author of *Psychological Warfare*, who has both produced and analyzed propaganda for the U. S. and foreign governments.

This book is already a minor but real military classic. It focuses attention on an ill-defined and often misunderstood field of military responsibilities. The authors understand their subject thoroughly, and they outline it authoritatively.

Their subject is mass communications to outsiders by belligerent powers in wartime. Most specifically, this is the use of loudspeakers, leaflets, radio, and other communications devices between fighting armies, or between air components as donors and land forces as recipients.

Organizationally, this is a casebook. The authors have drawn on all the best sources; when the best sources have not sufficed, they have contributed items themselves. The bulk of the book is: "what is psychological warfare and how would you do it?" though there is a framework of historical and critical material. The selections are well chosen. Such items as the broadcasts of Captain Zacharias, "operation American Dollar," the Katyn incident and the kiss of death we gave Pastor Kagawa stand forth with full vividness.

The Army may be moving from a limited battle-front conception of "psywar" to a broader conception of "psychological operations" to meet the needs of broad-spectrum strategy. Someone used his head wisely in declassifying this book, and The Johns Hopkins Press has done a fine job in bringing an important American military document before the U. S. public. Let us hope it impresses the Soviet public (or parts of it) as well.

The Atomic Scientists

"BRIGHTER THAN A THOUSAND SUNS"

By Robert Jungk; translated by James Cleugh
 Harcourt, Brace & Company, 1958
 369 Pages; Index; \$5.00

Reviewed by

COL. GEORGE C. REINHARDT, USA, Retired, co-author of *Atomic Weapons in Land Combat* (1954), now on the staff of RAND Corporation.

The invention and development of nuclear weapons—both atomic and "hydrogen" varieties—are regarded as impenetrable mysteries even by well-educated people. Only the select few, possessing alike the requisite scientific training and the sparingly granted security clearances, can be privy to such secrets. Hence the astonishment when Robert Jungk tells all, in the form of intimate "personal histories" of the principal protagonists, from the discovery of the first neutron to megaton-bomb tests.

Opening in the nostalgic atmosphere of the Weimar Republic's Georgia Augusta University at Göttingen, the scene is sketched. Brilliant, enthusiastic young students find inspiration and purpose at the feet of distinguished masters. That idyll is short-lived, shattered by the "grating notes of politics," first from Russia, where Stalin's struggle for power "became so acute it had begun to affect even the scientists." Then cleavage among the "national researchers," German physicists who sought to dismiss the work of Einstein and Bohr as "Jewish physics." By 1933, Göttingen as well as Russian halls of science were shattered by political persecution. The hegira had begun.

Briefly, Niels Bohr's Institute at Copenhagen provided a haven for men like Teller, Weizsäcker. Joliot-Curie in Paris,

Rutherford at Cambridge, Fermi in Rome carried on research into the debated significance of the newly discovered neutron. Scientific controversy raged across Europe inside laboratory walls, unknown to and unheeded by the outside world.

A few days before Christmas 1938, Otto Hahn, astounded at the purport of his own Berlin Institute's discoveries, published the record of a "step in contradiction to all previous experience in nuclear physics." With such hesitations and doubts, Jungk asserts, "the age of atomic fission began."

How this unheralded, monumental breakthrough in science soon reached—and was accepted by—Bohr at Copenhagen; how it was received among the newly gathered coterie of exiled physicists in the United States who vainly sought to keep confirmation from their one-time German colleagues; the misunderstandings in Paris that caused Joliot-Curie to disclose his own discoveries, are tensely narrated.

Early in 1939, Fermi, now at Columbia, unsuccessfully attempted to interest U. S. Navy research in the possibility of an atomic bomb. That led, later the same year, to the now famous Einstein letter to President Roosevelt resulting from Leo Szilard's and Edward Teller's solicitations, the good offices of ex-German editor Gustav Stolper as intermediary, and the assistance of banker Alexander Sacks, who personally delivered the missive to the President in October.

The rest of the "history" is studded with references to words that have become household bywords: Manhattan Project, Los Alamos, Alamogordo, Hiroshima, Bikini, Livermore, Eniwetok. The manner of presentation remains, as promised, "personal histories" of men whose names have filled, and still occupy, important places in press headlines. Espionage, treachery, sacrificial devotion, jealousies and intrigues mingle with the march of science.

Intensely interesting, with its simple language, unclassified explanation of complex physical phenomena, the book stresses its claim to factual accuracy, employing numerous injected references and a discreet use of footnotes. Yet ever present are the author's ideas, bias and interpretation. Some important references are obviously hidden behind professions of privileged information. Others, upon inspection, are impossible of verification except through Mr. Jungk. Worst of all, too many intimate details of notable persons are in bad taste. They add nothing to the basic narrative of achievement or mistakes and degrade the book's level to a lower order of journalism's "confidential exposures."

Seemingly, the author regards atomic scientists as a group, guilty of "the loss of that deeply rooted set of ethical beliefs out of which all science had for-

merly grown." Dwelling extensively upon Dr. Oppenheimer's security hearing, Mr. Jungk suggests the vital issue, for the long list of witnesses no less than the defendant, was: "Have you been loyal to mankind?" rather than "Have you been loyal to the state?"

The only heroes of Mr. Jungk's tragedy in science were the German atomic scientists who, he says, deliberately refused to create the atomic bomb for Hitler. The falseness of this contention was published as early as 1947 by S. A. Goudsmit's tape recordings of private conversations among those scientists while prisoners in England. Not one of them, except Hahn, believed the bomb could be made; arrogantly assumed no one could accomplish what was beyond their skills.

Upon closing the book one might ponder two questions: What right has Mr. Jungk to judge so harshly in realms of morality no less complex than nuclear physics? How can he expect to convict on such flimsy evidence?

Jeb Stuart's Campaigns

I RODE WITH JEB STUART

By Major Henry B. McClellan, CSA
Indiana University Press, 1958
455 Pages; Maps; Index; \$6.50

Reviewed by

RALPH W. DONNELLY, Treasurer of the American Military Institute and member of the Civil War Round Table.

This is one of the Civil War Centennial Series currently being published by Indiana University Press. The series is a set of edited reprints of some of the better works on the Civil War period whose very worth has made the original editions rare.

It is not clear why it has been felt necessary to substitute a new title and relegate *The Life and Campaigns of Major General J. E. B. Stuart* to a subtitle, unless it is an effort to acquire a more dramatic and striking "modern" title to attract potential purchasers. The new title strongly suggests Henry Kyd Douglas's *I Rode With Stonewall*. Actually, any serious reader or student of Confederate history needs no fancy title to encourage him to buy a copy of McClellan's *Stuart* at a reasonable price. Few copies have been available in recent years; prices for "nice" copies have run close to \$50.00.

Probably because of cost, the original maps have not been reproduced. Instead, four new maps are substituted. Three of them are essentially redrafts of maps used in the biography of Stuart by Burke Davis (who writes the foreword).

With the original maps the reader could follow Stuart's movements in detail. (McClellan was on Stuart's staff.) Such pleasure is not permitted with the new maps. Too many key points are

omitted in these oversimplified drawings. In the map of the engagement at Brandy Station unit symbols are unidentified, distinguishing only between Confederate and Union; nor are battery positions shown. As a result, the map fails to aid adequately in the understanding of the tactics related in the text.

However, this reissue, in spite of its inadequate maps, will be welcomed by military men and historians as well as by Civil War enthusiasts.

Dramatic Gettysburg

HIGH TIDE AT GETTYSBURG: The Campaign in Pennsylvania
By Glenn Tucker
Bobbs-Merrill Company, 1958
462 Pages; Maps; Index; \$5.00

Reviewed by

MAJ. GEN. E. J. STACKFOLE, PaNG, Retired, Harrisburg (Pa.) publisher, who has written three volumes on Civil War campaigns, including Gettysburg.

High Tide at Gettysburg, the latest book on the famous mid-year campaign of 1863, is the result of a labor of love by an author who earnestly studied the contour map of the battlefield as a young captain in World War I. Later, as an AWL from his newspaper desk in Washington, this AEF veteran repeatedly visited the scene with growing excitement as the urge to write the story became increasingly compelling.

No matter how often the history of that significant campaign has been written, there always seems to be room for still another account, in which almost invariably some new or fresh angle invokes a revived and lively interest in the subject.

In this instance the experienced pen of the trained news reporter and feature writer affords an Ernie Pyle style of writing that gives the reader the stimulating impression that he is actually on the scene and observing in person the dramatic episodes of the developing battle as they occur. Tucker's sprightly narrative puts a vast accumulation of facts, assiduously researched, into a palatable form that, at the hands of a less gifted writer, might cause the reader to bog down in the minutiae of tactical details.

"The result of the battle was governed at various stages by the steadfastness and initiative of a particular group or officer," the author remarks in his foreword; "leadership, often of smaller units, was the vital quality in the outcome." On that premise he proceeds in a workmanlike and competent manner to prove his point, with confirmatory evidence on virtually every page. Nothing of value to the searching mind of the inquiring reporter appears to have been omitted. His book has the virtue of covering fully every minor action, on whatever part of the field, without underplaying the im-

po tant military facts involving strategy, major tactics and logistics, all of which are unobtrusively worked into the narrative.

In Tucker's view, "decisions by brigadier generals and colonels were of paramount significance," so he has dug deeply into the background and character of many officers of lower rank. The lively profiles that come up lend extra color and interest to his account.

A perceptive student, Mr. Tucker is by no means content to accept at face value the historic evaluation that has evolved over the years on certain aspects of the battle. On many phases he introduces a refreshing view, as for example: "The striking feature about this phase of the battle of the first day [the concerted mid-afternoon attack of Early, Rhodes, Heath and Pender] was the visibility of the entire battle line from both flanks of each army. Pender, attacking Seminary Ridge, could see Early's Division assailing Barlow, and Avery's men on Early's left could look to the far right and see Pender. The foliage and buildings of 1863 did not obstruct the view."

It is that sort of writing which distinguishes Tucker's book from many others on the battle, giving it a new look that even the best-informed students of Gettysburg will find rewarding. Although inevitably there will be disagreement with some of his conclusions, none are categorical or dogmatic. In the last analysis it is the very controversial character of so much that occurred on the first three days of July 1863 that lends endless fascination to the Battle of Gettysburg.

Great Captain from Carthage

HANNIBAL: One Man Against Rome
By Harold Lamb
Doubleday & Company, 1958
310 Pages; Index; \$4.50

Reviewed by

BRIG. GEN. DONALD ARMSTRONG, USA,
Retired, *President Emeritus of the American Military Institute, who has covered all of Hannibal's battlefields in Italy and Africa.*

In the concluding sentence of his perceptive and fascinating story of Hannibal, Mr. Lamb enters a plea for his protagonist. He feels that history has been unfair to Carthage and to Hannibal. Certainly most of what we know about the Punic wars and the Carthaginian leaders comes from the Roman historians, Polybius and Livy. They would be less than human if their histories were not written with some slanting of the facts to favor the Romans. No Carthaginian writings have survived. They have disappeared as completely as ancient Carthage, the traces of which, as I discovered some months ago during

a visit to its site, are practically nonexistent.

Mr. Lamb has made a most convincing start in such a re-appraisal. This book has more history and less imaginative episodes than many of his earlier recreations of the past. It is none the less as swiftly paced, as full of interest, and as readable as these previous efforts to make authentic history as appealing as the most fanciful fiction. His story has everything—adventure, travel, biography and, of course, the strategy and tactics of the man whom Mr. Lamb calls, with ample justification, "the greatest of soldiers."

The professional military reader will regret the brevity of some of the battle descriptions, and the lack of maps. On the other hand, if he is observant, he will note with pleasure that Mr. Lamb is aware that logistics played an important role in warfare two thousand years ago. He will observe the political, economic and psychological factors in war, and Hannibal's clear thinking in these matters. He will follow the Carthaginian in his amazing march in 218 B. C. over the Pyrenees through southern Gaul and over the Alps to the valley of the Po.

Hannibal's strategic marches and his victorious battles, especially at Lake Trasimene and Cannae, are models of the military art which suggest applications on a grander scale in the atomic age. In fact, Mr. Lamb argues the value of the military history of Hannibal's war in these comments with which it would be difficult to disagree. Having in mind the material and numerical inferiority of Hannibal's forces, he writes: "There is a warning to the modern world—in Hannibal's life. It is that warfare need not be a vast conflict of technological skills and accumulations of weapons of destructions. Regardless of its mechanisms, war remains an equation of human beings, and their minds. It has never ceased to be an art, in which a supreme artist may appear out of a pass of the Alps to prevail over money—and man—and weapon-power. No amount of stockpiling of things can offset a superiority in minds. In 219 the Roman state was prepared for war in the usual manner; the Carthaginian was not. 'Of all that befell both the Romans and the Carthaginians the cause was one man and one mind—Hannibal's.'"

Mr. Lamb has made it easy and enjoyable to examine Hannibal's mind and methods. While the book is by no means a professional type of military history like the study of Hannibal by Col. Theodore A. Dodge, its brevity and its emphasis on the enduring aspects of warfare commend it to the modern soldier who finds himself hard pressed for time to keep abreast of his rapidly changing profession.

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REPORT FROM YOUR AUSA CP

To our host of friends who sent us Christmas greeting cards, thank you, and may this New Year bring all of you the best things in life.

The Council of Trustees held its regular quarterly meeting on 5 December 1958 in Washington. The following actions were taken by the Council:

(1) Received the report of the Nominating Committee (results were published in our January issue).

(2) Approved the report of the Awards Committee (details appear in a separate item below).

(3) Approved a new Chapter financing plan which is effective 1 January 1959 and which was previously endorsed by the Chapter delegates at the Fourth Annual Meeting (details have been sent to the Chapters).

(4) Appointed a committee to investigate possible changes in the procedure for handling resolutions. Committee will report at next regular meeting in March.

(5) Decided to hold the 1960 Annual Meeting in Washington, D. C., on 3-4-5 August 1960. Early date was selected to avoid conflict with the national election.

The newly approved Awards Program provides for:

(1) Two President's medals to be awarded by the Council of Trustees and presented by the President at the Annual Meeting. One "will be given to the member of the Association (any Chapter) contributing most to the Association of the United States Army during the year concerned." The other medal "will be given to the individual or organization contributing most to the advancement of the United States Army during the year concerned." Each medal will be accompanied by a certificate suitable for framing.

(2) Continuation of the present ROTC medals except that names of recipients will be placed on the back of the medals and the size may be increased slightly. Certificates will continue to accompany the medals.

(3) Continuation of the presentation of medals to outstanding graduates of Army service schools except that the name of the recipient will be placed on the back of the medal. Certificates will accompany the medals.

(4) A special award consisting of an illuminated parchment scroll to be given "each year to the Chapter doing the best job." The following criteria will be considered in selecting the recipient:

- Membership
- Attendance at meetings
- Activities
- Accomplishments

The chapter to receive the award will be selected by a committee of the council and will formally receive it at the Association's Annual Banquet.

(5) Continuation of the cash awards to the military personnel presenting outstanding papers at the Army Science Conference (the next one will be held in June 1959).

(6) Scrolls to be made available (for a small liquidating charge) to Chapters for use in their own awards programs.

WALTER L. WEIBLE
Lt. Gen., USA, Retd.
Executive Vice President

CHAPTERS

BOGARDUS S. CAIRNS CHAPTER—The Southeast Alabama Chapter changed its name on 12 December, to honor the late General Cairns, Commanding General of the Army Aviation Center, who was killed in an aircraft accident on 9 December. General Cairns was the leader in the movement to organize a chapter based on Fort Rucker. Principal speaker at the meeting was Dr. Ernst Stuhlinger, Director of the Research Products Laboratory at Huntsville, Ala., who took an interested audience through a make-believe trip through the universe, and predicted that the day was not too far off when men would sit in space stations and "gaze through windows at the stars and planets."

EAST BAY CHAPTER—Board of Directors meeting on 9 December discussed methods of reacting more quickly to National AUSA requests; more frequent meetings of the Board was the decision.

FORT LEONARD WOOD CHAPTER—Six hundred attended quarterly meeting on 12 December; principal speaker was Lt. Gen. William H. Arnold, CG, Fifth U. S. Army. Band music, choral selections, and a cafeteria-style dinner added to the enjoyment of the meeting. Good press, radio and TV coverage resulted.

GENERAL JOHN J. PERSHING CHAPTER—Joint Pearl Harbor Day meeting with Reserve Officers Association heard Maj. Gen. Derrill M. Daniel, CG, XVI Corps, as principal speaker.

GREATER LOS ANGELES CHAPTER—October meeting heard report from outgoing President, Robert C. Geffs, who among other items mentioned 17 classifications of activities that he engaged in as a representative of the Chapter, ranging from presentation of ROTC medals to a reception for the Secretary of the Army. Col. John P. Dicks was honored for personally recruiting 70 members.

HAWAII CHAPTER—Lt. Gen. John W. (Iron Mike) O'Daniel spoke on "Deterrence of Communism in Vietnam" at meeting on 4 December. Seventeen Vietnamese officers, training at Schofield Barracks, were guests at the meeting. After General O'Daniel's speech, a film, "Flying Soldiers," was shown. Brig. Gen. K. J. Fielder, President, reported on his attendance at AUSA's 1958 Annual Meeting. The Chapter voted unanimously to support the 1958 AUSA Resolutions.

NEW YORK CHAPTER—First Annual Holiday Supper Dance, held at 7th Regiment Armory, was a complete success. Pvt. Marvin Zuchert, Soldier of the Month, and his date, WAC Pvt. Carmella Galente, were special guests.

PIKES PEAK CHAPTER—Chapter was co-host with four local civic organizations at a luncheon on 11 December honoring the Secretary of the Army; affair was most successful and received widespread publicity.

POLK CHAPTER—Brig. Gen. M. W. Schewe, CG of Fort Polk, made the principal address at quarterly meeting on 15 December, emphasizing the threat of international communism and the continuing need for preparedness. Col. John W. Casey, Deputy Post Commander, gave a report on the 1958 Annual Meeting, noting the continuing trend in AUSA toward local interest as evidenced by the rapid growth in number of chapters. Chapter passed resolution on strength of the Army, which was sent to each member of Louisiana's Congressional delegation.

RYUKYUS CHAPTER—Cocktail hour, buffet dinner and selections by the Soldier's Chorus led off the Charter Meeting on 19 November. SP4 Raymond Boehringer, Soldier of the Month, was a special guest. Col. Jack F. Hudson, Chairman of the Organization Committee, reported on AUSA's 1958 Annual Meeting, and introduced the Chapter officers. Col. John T. Herrod presented the charter to Lt. Gen.



ST. LOUIS, MO. Maj. Gen. Charles D. W. Canham (third from left) discusses petition for formation of local Chapter with newly elected officers of St. Louis Chapter. Left to right: MSgt Joseph F. Ehrich, Treasurer; Col. J. P. Stupp, Second Vice President; and Major E. M. Ormrod, Secretary. Other officers are Maj. Gen. Leif J. Sverdrup, President, and Brig. Gen. Clark Hungerford, First Vice President.



FRANKFURT, GERMANY. Col. F. R. Blankenship (left), newly elected President of Frankfurt Chapter, is congratulated by Col. M. M. Kernan, outgoing President, during installations ceremonies at the Casino Club on 19 December.



OKINAWA. Head table at first meeting dinner of Ryukyus Chapter on 19 November. Left to right: Mr. Andrew H. Bulkley, Treasurer; CWO R. H. Allen, Vice President; Col. Edward C. Coffin, President; Brig. Gen. Vonna F. Burger, Civil Administrator, USCAR; Lt. Gen. Donald P. Booth, CG, USARYIS/IX Corps; Col. Jack F. Hudson, Master of Ceremonies; Brig. Gen. George T. Powers, keynote speaker; Col. John T. Herrod, Chief of Staff; MSgt Lester R. Fulcomer, III, Vice President; Maj. Laurence P. Lansing, Secretary; SP4 Raymond G. Boehringer, Command's Soldier of the Month, special guest.

Donald P. Booth, who urged enlisted participation in Chapter affairs. Brig. Gen. George T. Powers, III, spoke on the aims and objectives of AUSA.

SARASOTA-BRADENTON CHAPTER—Mayor-Commissioner Frank L. Hoerstering, City of Sarasota, presented a large golden "key to the city" to Col. George V. Gibbs, Chief, Military District of Florida, at meeting on 2 December. Colonel Gibbs spoke on "What the AUSA Means to the U. S. Army and its Civilian Components." Following Colonel Gibbs' speech, a spirited question-and-answer session completed the meeting. News coverage of the meeting was excellent.

WESTCHESTER COUNTY CHAPTER—Col. Joseph H. Weichmann, Director of the New York Region of the Army Audit Agency, spoke on "Financial Management of the U. S. Army" at dinner-meeting on 9 December. This meeting also served to welcome the new Commanding Officer of Fort Slocum, Col. William F. Jackson, and Mrs. Jackson. Chaplain (Major) Gerhardt W. Hyatt reported on AUSA's 1958 Annual Meeting. An attractive printed program was a souvenir of the occasion.

PALM BEACH CHAPTER—Chapter, at meeting on 23 November, following dedication of new Army Reserve Training Center, voted that \$25 be given to the Armory Board to help pay expenses of dedication. Col. Raymond Shepley, President, reported on AUSA's 1958 Annual Meeting, and appointed an Executive Committee.

ROTC COMPANIES

CAVALIER COMPANY, University of Detroit—Brig. Gen. S. L. A. Marshall, USAR, writer, military historian, and Director of AUSA,



COLORADO SPRINGS, COLO. Some of the principals who took part in Colorado Springs civic and Pikes Peak Chapter luncheon honoring Secretary of the Army Wilber M. Brucker on 11 December. Seated, left to right: Ernest W. O'Connor, President, Sertoma Club; Franklin L. Orth, Deputy ASA; Col. Jasper D. Ackerman, Chapter President; Mr. Brucker; Courtney Johnson, Deputy ASA; Joe Reich, Chairman, Military Affairs Committee, Chamber of Commerce. Standing, left to right: Maj. Gen. Martin J. Morin, CG, Fort Carson; Lt. Gen. Charles E. Hart, CG, USARADCOM; Lt. Gen. William H. Arnold, CG, Fifth Army; Rev. Harvey Prinz, Chaplain, Sertoma Club; Lester J. Sletta, President, Pikes Peak Kiwanis Club; Brig. Gen. B. F. Taylor, Executive to SA.



FORT SHAFTER, T. H. Lt. Gen. John W. O'Daniel, former CG, U. S. Army, Pacific, now retired, who was guest speaker at Fort Shafter Chapter's quarterly meeting on 4 December. General O'Daniel talks to Vietnamese officers on duty with the Army after the meeting.

addressed the full Company membership plus PMST's staff at meeting on 11 December.

COLORADO STATE UNIVERSITY COMPANY—October meeting featured a tape recording of the Congressional investigation on "Brainwashing Techniques by the Communists in the Korean Conflict." This was a pre-charter meeting.

DAKOTA COMPANY, North Dakota Agricultural College—Meeting on 20 November checked plans for Military Ball held on 22 November. Affair was one of most successful in the College's history. December meeting, on 11th, viewed slides of Far East shown by Captain Horner.

EDMUND R. WALKER COMPANY, University of Connecticut—Meeting on 11 December welcomed 10 MS IIs as prospective members. Maj. John Doody, Assistant PMST, spoke on the life of an Army officer in Europe. Company has taken on assignment of maintaining a PIO board for all ROTC activities.

FARRIS-WARE COMPANY, Prairie View A&M College—First Initiation Banquet inducted 15 new members on 18 November. Candidates performed pledge duties for a week. Principal speaker was Lt. Richard L. Price, USAR, who emphasized the contribution of the ROTC to the College. Meeting on 11 November was co-sponsored by Company and campus veterans' organization; entire ROTC group (584 cadets) plus several hundred students and the faculty, attended. Col. Raymond W. Darrah, Chief, ROTC Division, Fourth U. S. Army, was principal speaker on a well-balanced program. Attractive printed program was distributed for this event, as well as for Initiation Banquet.

IDAHO STATE COLLEGE COMPANY—Meeting on 16 December heard Capt. Frederick A. Hunter speak on POWs and Code of Conduct, with supplementary remarks by Col. H. P. Rimmer, PMST. Company sponsored rifle match with Montana State College, Utah State



TULANE UNIVERSITY, LA. Col. Jonas Spurl, Vice President of New Orleans Chapter (in civilian clothes) presents certificates of membership to members of Tulane Company at its December meeting. Others are (left to right): Cadet Capt. David G. Baker, Cadet Lt. Lester W. Barnett; Cadet MSgt Ken Friend; Cadet Maj. Robert Mitchell; Cadet Richard Lumsden; and Col. Fred A. Palumbo, PMST.



FORT RUCKER, ALA. Dr. Ernst Stuhlinger (center), Redstone Arsenal scientist, who explained some techniques involved in putting an artificial moon into orbit to members and guests of Bogardus S. Cairns Chapter at a recent meeting. With him are (left to right): Brig. Gen. John A. Barclay, CG, ABMA; Col. James S. Luckett, then CO, Army Aviation Center; Hon. M. N. Brown, Mayor of Enterprise; and Jimmy Park, President.

University, and University of Utah during 5-6 December; Montana State won the match trophy.

ILLINI COMPANY, University of Illinois—Several wives and guests attended the 10 December meeting which featured panel discussion on military life and customs by Capt. and Mrs. J. W. Mann and Capt. and Mrs. Richard Guetin, plus color slides of Europe and Asia.

INDIANA STATE TEACHERS COLLEGE ROTC COMPANY, Indiana, Pa.—Maj. Gen. Alfred B. Denniston, CG, QM Training Command, Fort Lee, spoke to the Company on their future as officers, at meeting on 18 November. The entire Cadet Corps were guests of the Company at a demonstration of Russian weapons and tactics.

LASALLE ROTC COMPANY, LaSalle Military Academy—Meeting on 23 November heard the Rev. Father William Crowley, Academy chaplain, describe his experiences with the 29th Division in World War II. At this meeting the Company made arrangements to make a presentation on AUSA to the entire Cadet Battalion. The Company is also sponsoring a Cadet of the Month award, which carries with it a Friday furlough, plus a certificate.

MAD ANTHONY WAYNE COMPANY, University of Toledo—Film, "Count-down to Explorer," featured at 23 November meeting, which had as guests nine prospective members.

MONTANA STATE UNIVERSITY ROTC COMPANY—Capt. Robert L. Harper and Capt. Rodney Gilbertson detailed their combat experiences in Korea at 3 December meeting.

PENNSYLVANIA STATE UNIVERSITY COMPANY—Thirty members attended meeting on 9 December, at which 12 pledges were initiated into the Company. A film on Russian armor was shown.

ROBERT E. SYLVEST COMPANY, Northwestern State College, La.—Film on Pentomic division was shown to Company at meeting on 4 Decem-

ber, which also considered stepping up number of meetings to two each month.

SIoux COMPANY, University of North Dakota—Colonel Newman, Commanding Officer of the Grand Forks Air Defense Sector, addressed 9 December meeting on coordination of the Army and Air Force in air defense. Plans were made for the Military Ball.

SOONER COMPANY, University of Oklahoma—Maj. Gen. Hal Muldrow, CG, 45th Infantry Division, Oklahoma National Guard, spoke on the place of the National Guard in the defense of the United States at a meeting on 11 December, and answered many questions about the Guard posed by the cadets. The program was considered one of the more successful at this active Company. During 4-6 December, 22 Company members visited the Army Air Defense Center at Fort Bliss, and saw two Ajax missiles fired and find their target. Both Company members and military faculty were enthusiastic about the briefings received.

TEXAS TECH COMPANY, Texas Technological College—Maj. W. W. Wilson, USAF, spoke on tactical air support at meeting on 20 November. The address was supplemented by a film.

TULANE ROTC COMPANY, Tulane University of Louisiana—Lt. Col. Jonas Spurl, a Vice President of the New Orleans Chapter, AUSA, made the principal address at the induction of a new pledge class in December. The new members had a rigorous course of instruction under the supervision of Cadet MSgt Ken Friend, Pledgemaster.

VALLEY FORGE COMPANY, Valley Forge Military Academy—Meeting on 30 November had program built around the Cuban revolution. Captain Aeriola, of the Academic Department, discussed the fighting and its causes, and illustrated his talk with photographs. VFMA includes several cadets from Cuba; thus, the subject was of intense interest.



UNIVERSITY OF ILLINOIS. Mrs. J. W. Mann and Mrs. Richard Guetin, and their Captain husbands behind them, conducted a panel on military life and customs of the service at the meeting of Illini Company on 10 December. (Gerald D. Lewy photo)



IDAHO STATE COLLEGE. Cadet James J. Anderson (left), Idaho State College Company, presents the trophy to Cadet Wigger of Montana State College, winner of the Bengal Trophy Rifle Match, 5-6 December at Idaho State College.



UNIVERSITY OF DETROIT. Brig. Gen. S. L. A. Marshall, USAR (center), addresses the Cavalier Company during the coffee call meeting on 11 December. Others are (left to right): Lt. Col. Frank P. Dakan, PMST; Cadet Capt. William E. Eyllie, Secretary; Cadet Capt. Thomas L. Campbell, President; Cadet Sgt. Thomas A. Murphy.

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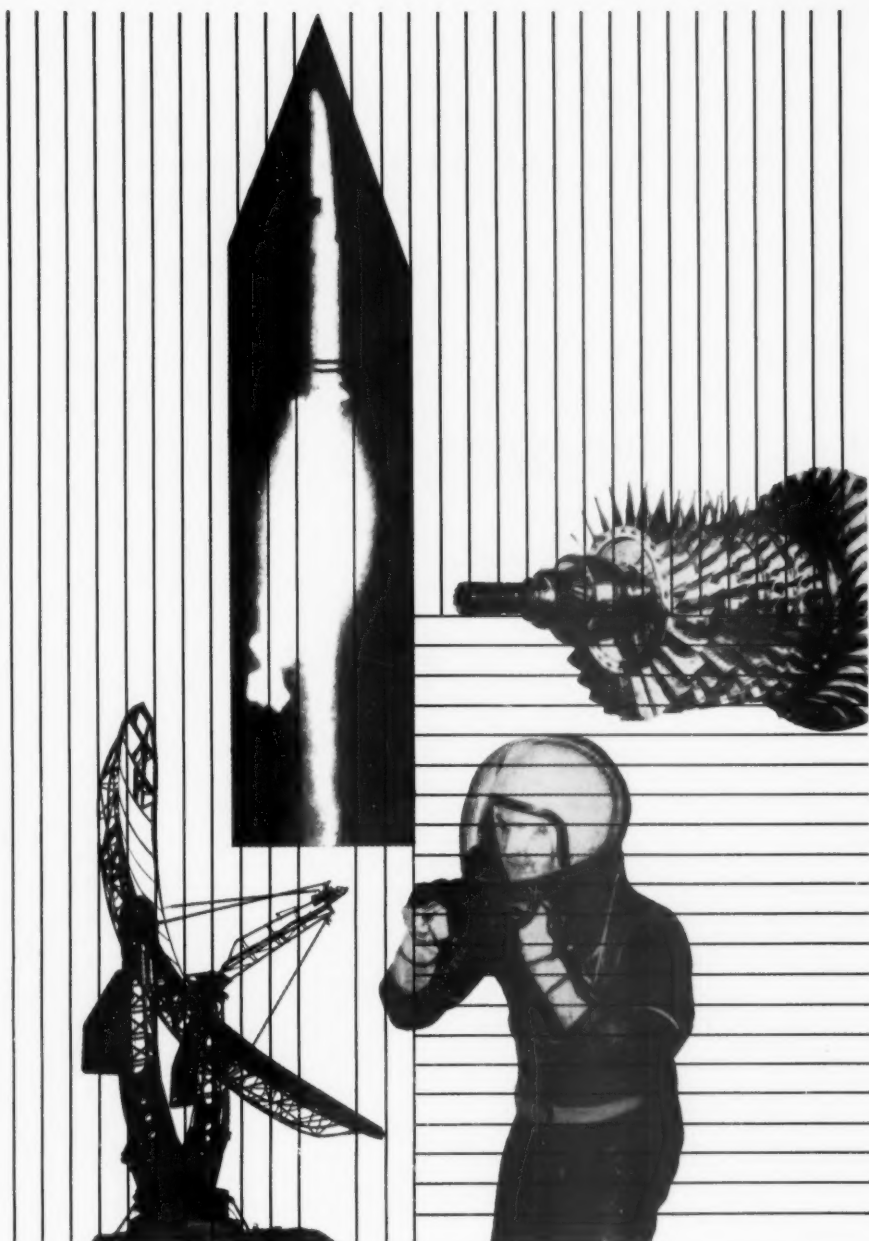
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